

ASSESSORS' HANDBOOK  
SECTION 534

RURAL BUILDING COSTS

JANUARY 2001

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CALIFORNIA STATE BOARD OF EQUALIZATION

JOHAN KLEHS, HAYWARD

DEAN ANDAL, STOCKTON

CLAUDE PARRISH, TORRANCE

JOHN CHIANG, LOS ANGELES

KATHLEEN CONNELL, SACRAMENTO

JAMES E. SPEED, EXECUTIVE DIRECTOR

FIRST DISTRICT

SECOND DISTRICT

THIRD DISTRICT

FOURTH DISTRICT

STATE CONTROLLER



# FOREWORD

This edition of Assessors' Handbook Section 534, *Rural Building Costs*, updates some costs contained in previous editions and includes new data. As with prior editions, pages are printed in loose-leaf form to allow for insertion of revisions by section or page.

There are increases throughout the state for permits and fees to construct buildings. Because of the variation of charges, appraisers must research and analyze the charges for these permits and fees to see how they affect the rural building construction costs in their county.

General instructions and pertinent information concerning the use of this handbook are contained in an introductory section. Specific instructions and comments applicable to each building type will be found in the introductory pages of the section of the manual devoted to that particular type.

Although diligent efforts have been made to supply accurate and reliable information, it is very important to temper this data with local costs, since construction costs may vary both within and among counties.

This revision was prepared by Policy, Planning, and Standards Division staff under the direction of the Property Taxes Department.

Richard C. Johnson  
Deputy Director  
Property Taxes Department  
State Board of Equalization  
January 2001

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# **AH 534.00: INTRODUCTION**

## **BASIS OF COST**

Costs in this manual are based on the cost to build on a level and cleared site in California as of the date at the bottom of each page. The costs are contingent on the following assumptions:

- A clear site
- Normal soil conditions
- Adequate site drainage
- Excludes all off-site improvement cost

The costs in this handbook include normal expenses incurred in placing the improvement or component in the hands of the ultimate consumer including the following:

1. Excavation for foundations, piers, and other structural foundation components
2. Materials
3. Labor
4. Architects' fees
5. Engineering fees
6. Supervision
7. Permits for improvements, land use, environmental impact, etc.
8. Normal utility hook-ups, if any
9. Contractor's overhead and profit
10. Contingencies
11. Carrying charges during construction, e.g., taxes, interest
12. Legal expenses
13. Typical sales commissions, costs, and transfer fees

All data are in the form of in-place costs for improvements and additives that may differ between various structures. The costs in this handbook do not include entrepreneur's profit.

## **AH 534.10: BASIC FARM BUILDINGS**

This section contains specifications and costs for various basic farm buildings including the following:

- Prefabricated horse barns
- General purpose barns
- Hay storage barns
- Feed barns
- Pole buildings
- Shops
- Machinery and equipment sheds
- Prefabricated wood storage sheds
- Small sheds

## PREFABRICATED HORSE BARNS

### SPECIFICATIONS

Structure	6" steel purlins on 6' centers; enamel exterior
Foundation	Concrete piers
Floor	Dirt
Door	Sliding stall (inside tract)
Roof	2" x 12" pitch; skylight in each stall
Roofing	White 26 gauge steel hi-rib
Walls	Laminated wall panels; grilled fronts; top 4'; 5" colored gutter trim

### IN LINE SHED ROW BARN

Stall Size	First Stall	Each Additional Stall
12' x 12'	\$2,560	\$2,180
12' x 16'	3,050	2,660

Shed roof overhang per square foot: 8' — **\$4.55**

12' — **\$5.15**

### GABLE ROOF BARN—STANDARD BREEZEWAY

Stall Size	First Two Stalls	Each Additional Two
12' x 12' with 12' breezeway	\$6,550	\$5,570
12' x 12' with 16' breezeway	6,940	5,900
12' x 16' with 12' breezeway	7,700	6,700
12' x 16' with 16' breezeway	8,150	7,090

### GABLE ROOF BARN—RAISED BREEZEWAY

Stall Size	First Two Stalls	Each Additional Two
12' x 12' with 12' breezeway	\$7,300	\$6,240
12' x 12' with 16' breezeway	7,940	6,860
12' x 16' with 12' breezeway	8,650	7,560
12' x 16' with 16' breezeway	9,300	8,150

Roof extension per square foot—**\$5.15**

12-foot Breezeway Doors—**\$700 each**

16-foot Breezeway Doors—**\$800 each**

### ADDITIVES

Item	Cost
Concrete floor	\$3.00 per square foot
Full footing	\$8.75 per lineal foot
Portable 5'-4 rail corral panels	\$6.75 - \$7.75 per lineal foot
Portable 5'-5 rail corral panels	\$7.50 - \$8.00 per lineal foot

## **PREFABRICATED HORSE BARNS**



**SHED ROW WITH 8 FOOT ROOF EXTENSION**



**GABLE ROOF WITH RAISED BREEZEWAY**

## **PREFABRICATED HORSE BARNS**



**GABLE ROOF—RAISED BREEZEWAY WITH ROOF EXTENSION**



**12' X 12' STALL**



## GENERAL PURPOSE BARN



**FAIR QUALITY**



**AVERAGE QUALITY**



**GOOD QUALITY**

## GENERAL PURPOSE BARNs

### BUILDING SPECIFICATIONS

Components	Class 1 Fair Quality	Class 2 Average Quality	Class 3 Good Quality
Foundation	Redwood or cedar mudsills	Concrete or masonry piers	Continuous concrete
Floor	Dirt	Dirt	Concrete
Wall Structure	Light wood frame, 10' eave height	Average wood frame, 10' eave height	Good wood frame, 10' eave height
Roof Construction	Medium to high pitch—2" x 4" rafters, 24" to 36" on center, or light wood trusses	Medium to high pitch—average wood trusses	Medium to high pitch—good wood trusses
Roof Cover	Light aluminum	Standard gauge corrugated iron or aluminum	Wood shingles; 26-gauge steel
Electrical	None	Two outlets per 1,000 square feet	Four outlets per 1,000 square feet
Plumbing	None	One cold water outlet	Two cold water outlets

### SQUARE-FOOT COSTS

Class	Square-Foot Area					
	1,000	3,000	5,000	7,000	9,000	11,000
1	13.55	10.29	9.55	9.18	8.83	8.75
2	17.40	13.95	12.94	12.47	12.15	11.83
3	26.68	21.86	20.22	19.47	19.00	18.57

## HAY STORAGE BARNs

### BUILDING SPECIFICATIONS

Components	Class 1 Fair Quality	Class 2 Average Quality	Class 3 Good Quality
Foundation	Redwood or cedar mudsills	Concrete or masonry piers	Continuous concrete
Floor	Dirt	Dirt	Concrete
Wall Structure	Light wood frame, 20' eave height	Average wood frame, 20' eave height	Good wood frame, 20' eave height
Exterior Wall Cover	Light aluminum or low cost boards	Standard gauge corrugated iron or aluminum	Good wood siding, painted
Roof Construction	Medium to high pitch—2" x 4" rafters, 24" to 36" on center, or light wood trusses	Medium to high pitch—average wood trusses	Medium to high pitch—good wood trusses
Roof Cover	Light aluminum	Standard gauge corrugated iron or aluminum	Wood shingles; 26-gauge steel
Electrical	None	Two outlets per 1,000 square feet	Four outlets per 1,000 square feet
Plumbing	None	One cold water outlet	Two cold water outlets
Shape	Nearly square, length between one and two times width	Nearly square, length between one and two times width	Nearly square, length between one and two times width

### SQUARE-FOOT COSTS

Class	Square-Foot Area					
	1,000	3,000	5,000	7,000	9,000	11,000
<b>1</b>	10.97	9.14	8.25	7.70	7.36	7.02
<b>2</b>	12.54	10.42	9.48	8.81	8.36	8.08
<b>3</b>	20.87	17.38	15.63	14.65	13.98	13.44

## **HAY STORAGE BARNS**



**AVERAGE-QUALITY HAY STORAGE BARN**

## FEED BARN



## FEED BARN

### BUILDING SPECIFICATIONS

Components	Class 1 Fair Quality	Class 2 Average Quality	Class 3 Good Quality
Foundation	Redwood or cedar mudsills	Concrete or masonry piers	Continuous concrete
Floor	Dirt	Concrete in center section	Concrete
Wall Structure	Light wood frame, 8' eave height at drip line	Average wood frame, 8' eave height at drip line	Good wood frame, 8' eave height at drip line
Exterior Wall Cover	Open sides and ends	Open sides, standard gauge corrugated iron, aluminum, or average wood siding on ends	Open sides, good siding painted on ends
Roof Construction	Medium to high pitch—2" x 4" rafters, 24" to 36" on center, or light wood trusses	Medium to low pitch—average wood trusses	Medium to low pitch—good wood trusses
Roof Cover	Light aluminum	Standard gauge corrugated iron or aluminum	Wood shingles; 26-gauge steel
Electrical	None	Two outlets per 1,000 square feet	Four outlets per 1,000 square feet
Plumbing	None	One cold water outlet	Two cold water outlets

### SQUARE-FOOT COSTS

Class	Square-Foot Area					
	1,000	3,000	5,000	7,000	9,000	11,000
1	6.93	6.38	6.12	6.02	5.95	5.89
2	10.94	10.06	9.69	9.57	9.45	9.41
3	12.73	11.69	11.37	11.20	11.09	11.04

# POLE BUILDINGS

## BUILDING SPECIFICATIONS

Structure	Poles: 15' to 20' on center; wood or steel
Floor	Dirt
Roof	Light trusses; low pitch; wood or steel
Roofing	Galvanized steel or colored steel
Walls	Wall height: 18' - 21' to plate

## SQUARE-FOOT COSTS

## ALL SIDES OPEN

## GOOD QUALITY

End Width	Side Length									
	30	50	80	100	120	140	150	160	180	200
20	6.38	6.08	5.92	5.76	5.66	5.56	5.51	5.46	5.41	5.41
30	5.81	5.66	5.51	5.35	5.25	5.15	5.10	5.05	4.99	4.94
40	5.46	5.30	5.15	4.99	4.83	4.73	4.68	4.68	4.68	4.68
50	5.15	4.99	4.83	4.68	4.53	4.48	4.48	4.48	4.48	4.48
60	4.89	4.73	4.53	4.48	4.48	4.48	4.48	4.48	4.48	4.48
70	4.89	4.68	4.53	4.48	4.48	4.43	4.43	4.43	4.43	4.43
80	4.89	4.68	4.53	4.48	4.48	4.43	4.43	4.43	4.43	4.43

Deduct 15 percent for light duty, fair quality construction.

Skylights (2' x 10') **\$100.00** each

Vents (14", Rotary) **\$200.00** each

Poles, In-Place **\$85.00** each

Facia Gutter 7" and Downspout **\$4.25** per lineal foot

Reinforced Concrete Floors:

4" **\$2.25** per square foot

6" **\$3.00** per square foot

## POLE BUILDING





## SHOPS



## AVERAGE QUALITY SHOPS

## SHOPS

### BUILDING SPECIFICATIONS

Components	Class 1 Fair Quality	Class 2 Average Quality	Class 3 Good Quality
Foundation	Light concrete	Light concrete	Standard concrete
Floor	3" concrete	4" concrete	4" reinforced concrete
Wall Structure	Light wood frame, 15' eave height	Average wood frame, 15' eave height	Good wood frame, 15' eave height
Exterior Wall Cover	Light aluminum or low cost boards	Standard gauge corrugated iron, aluminum, or average wood siding	Good wood siding painted or 26-gauge steel
Roof Construction	Low to medium pitch— 2" x 4" rafters, 24" to 36" on center, or light wood trusses	Low to medium pitch— average wood trusses	Medium pitch— good wood trusses
Roof Cover	Light aluminum corrugated	Standard gauge corrugated iron or aluminum	Wood shingles; 26-gauge steel
Electrical	Two outlets per 1,000 square feet	Two outlets per 1,000 square feet	Four outlets per 1,000 square feet
Plumbing	None	One cold water outlet	Two cold water outlets
Doors	One light sliding or swinging door per 2,000 square feet	One average sliding or swinging door per 2,000 square feet	One drive-thru door per 1,000 square feet plus one walk-thru door
Windows	None	None or few low cost	5 percent of floor area
Shape	Nearly square, length between one or two times width	Nearly square, length between one and two times width	Nearly square, length between one and two times width

### SQUARE-FOOT COSTS

Class	Square-Foot Area									
	1,000	1,500	2,000	2,500	3,000	4,000	5,000	6,000	8,000	10,000
1	13.96	12.83	12.01	11.42	10.88	10.60	10.28	10.01	9.74	9.47
2	17.53	16.18	15.04	14.50	13.96	13.37	12.84	12.55	12.29	12.01
3	20.22	20.22	19.10	18.31	17.51	16.93	16.40	15.87	15.30	14.75

## MACHINERY AND EQUIPMENT SHEDS

### BUILDING SPECIFICATIONS

Components	Class 1 Fair Quality	Class 2 Average Quality	Class 3 Good Quality
Foundation	Redwood or cedar mudsills	Concrete or masonry piers	Continuous concrete
Floor	Dirt	Concrete	Concrete
Wall Structure	Light wood frame, 10' to 12' eave height	Average wood frame, 10' to 12' eave height	Good wood frame, 10' to 12' eave height
Exterior Wall Cover	Light aluminum or low cost boards	Standard gauge corrugated iron or aluminum	Good wood siding, painted
Roof Construction	Low to medium pitch—shed type, light wood framing	Low to medium pitch—gable or shed type, average wood framing	Low to medium pitch—gable or shed type, good wood framing
Roof Cover	Light aluminum	Standard gauge corrugated iron or aluminum	Wood shingles; 26-gauge steel
Electrical	None	Two outlets per 1,000 square feet	Four outlets per 1,000 square feet
Shape	Usually elongated, width between 15 and 30 feet, any length	Usually elongated, width between 15 and 30 feet, any length	Usually elongated, width between 15 and 30 feet, any length

### SQUARE-FOOT COSTS—TYPE I, ALL SIDES CLOSED

Class	Square-Foot Area										
	500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	6,000
1	8.91	8.01	7.45	7.18	7.30	6.96	6.90	6.80	6.73	6.67	6.63
2	13.34	11.63	11.09	10.82	10.58	10.33	10.25	10.20	10.14	10.09	10.04
3	17.27	15.58	14.50	14.23	13.90	13.74	13.57	13.47	13.37	13.27	13.20

### SQUARE-FOOT COSTS—TYPE II, ONE SIDE OPEN

Class	Square-Foot Area										
	500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	6,000
1	7.83	6.57	6.18	5.96	5.85	5.79	5.73	5.68	5.63	5.57	5.52
2	12.19	10.48	9.66	9.38	9.10	9.03	8.88	8.82	8.77	8.67	8.61
3	12.31	13.63	12.82	12.29	11.95	11.79	11.69	11.57	11.52	11.46	11.41

## **MACHINERY AND EQUIPMENT SHEDS**

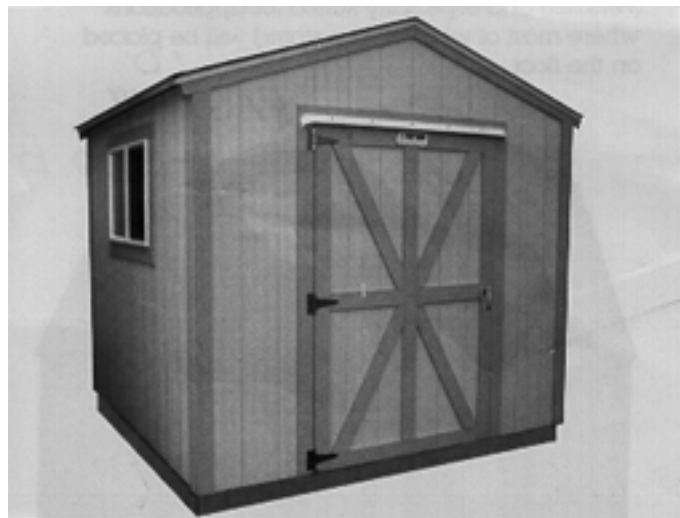
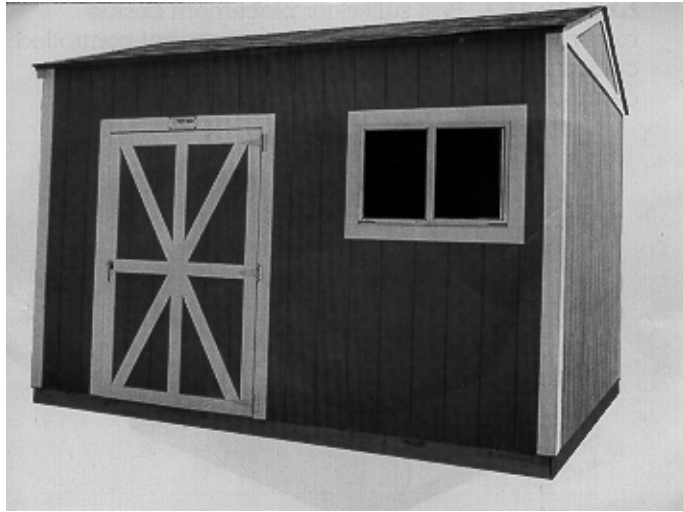


**FAIR-QUALITY EQUIPMENT SHED**



**AVERAGE-QUALITY EQUIPMENT SHED**

## **PREFABRICATED WOOD STORAGE SHEDS**



**AVERAGE QUALITY**

## PREFABRICATED WOOD STORAGE SHEDS

Prefabricated wood storage sheds are normally purchased at lumber yards and home improvement centers.

### BUILDING SPECIFICATIONS

Foundation	4" x 4" skids or 2" x 6" floor joists
Floor	Plywood or particleboard
Walls Structure	2" x 4" framing on 24" centers, 6 ½' to 7 ½' eve height
Exterior Wall Cover	Plywood or particleboard with one 4' x 6' door
Roof	Gable low to medium pitch, 2" x 4" rafters
Roof Cover	Metal or composition shingles

### SQUARE-FOOT COSTS

Square Feet	Price Per Square Foot
50 to 74	\$17.25
75 to 99	\$15.00
100 to 139	\$14.00
140 to 199	\$13.00
200 and up	\$10.70 - \$11.80

### ADDITIVES

Windows	2' x 2'	<b>\$60</b>
	3' x 2'	<b>\$70</b>
Doors—Double 6' Wide		<b>\$50</b>
Skylight—2' x 2'		<b>\$100</b>
Turbine Vent		<b>\$60</b>
Shelves (per linear foot)		<b>\$3</b>
Loft (per square foot)		<b>\$3</b>

## SMALL SHEDS

### BUILDING SPECIFICATIONS

Components	Class 1 Fair Quality	Class 2 Average Quality	Class 3 Good Quality
Foundation	Redwood or cedar mudsills	Concrete or masonry piers	Continuous concrete
Floor	Dirt	Boards	Concrete
Wall Structure	Light wood frame, 8' eave height	Average wood frame, 8' eave height	Good wood frame, 8' eave height
Exterior Wall Cover	Light aluminum or low cost boards	Standard gauge corrugated iron or aluminum, or average framing	Good wood siding, painted, or steel
Roof Construction	Low to medium pitch—shed type, light wood framing	Low to medium pitch—gable or shed type, average wood framing	Low to medium pitch—gable or shed type, good wood framing
Roof Cover	Light aluminum	Standard gauge corrugated iron or aluminum	Wood shingles; good steel cover; composition shingles
Electrical	None	None	None
Shape	Usually elongated, width between 6 and 12 feet, any length	Usually elongated, width between 6 and 12 feet, any length	Usually elongated, width between 6 and 12 feet, any length

### SQUARE-FOOT COSTS—TYPE I, ALL SIDES CLOSED

Class	Square-Foot Area										
	50	60	80	100	120	150	200	250	300	400	500
1	12.39	11.25	10.04	8.58	8.25	7.68	7.42	7.11	6.77	6.52	6.20
2	17.43	15.66	14.17	13.02	12.39	11.82	11.25	10.67	10.04	9.74	9.47
3	21.96	19.67	18.31	17.15	15.94	14.74	13.88	13.31	12.68	12.39	12.09

### SQUARE-FOOT COSTS—TYPE II, ONE SIDE OPEN

Class	Square-Foot Area										
	50	60	80	100	120	150	200	250	300	400	500
1	8.83	8.25	7.68	7.11	6.48	5.91	5.62	5.32	5.05	4.69	4.42
2	13.02	12.10	11.25	10.61	10.04	9.47	8.83	8.25	7.96	7.68	7.40
3	16.34	14.64	14.17	13.31	12.39	11.82	11.25	10.61	10.04	9.46	9.18

## **AH 534.20: DAIRY BARNs**

This section contains structures and equipment typically used at a dairy. Specifications and costs are provided for the following:

- Commonly used milking parlors
- Rotary barns
- Parallel barns
- Modern Herringbone barns
- Holding, wash, and drip area equipment
- Dairy equipment
- Freestall barn
- Hospital barn
- Corrals
- Commodity barns
- Heat recovery system
- Miscellaneous equipment
- Septic tanks
- Feedlane stanchions
- Silage pits
- Liquid manure systems
- Feed tanks
- Grade "B" barns
- Stanchion barns
- Walk-through type barns

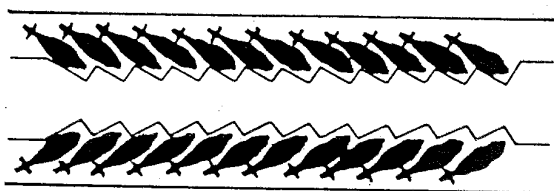


# DAIRY BARNS

## COMMONLY USED MILKING PARLORS

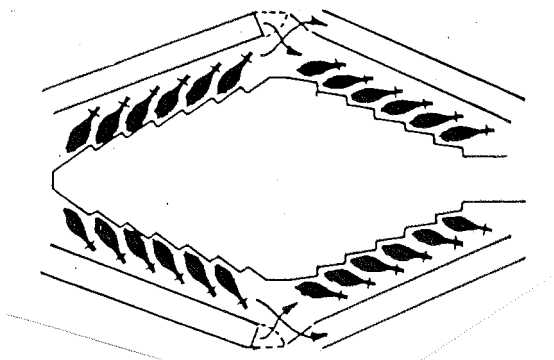
Below are three of the most common styles of milking barns used in California. The most frequently found is the herringbone or sawtooth design. There are several variations of this design. The polygon design is a parlor using multiple sets of herringbone stalls. The parallel design is gaining popularity, especially in larger parlors. The mentioned parlors all have a central pit for the milker, with cows elevated on one or all sides. The following details show basic differences of each design.

### HERRINGBONE (DOUBLE 12)



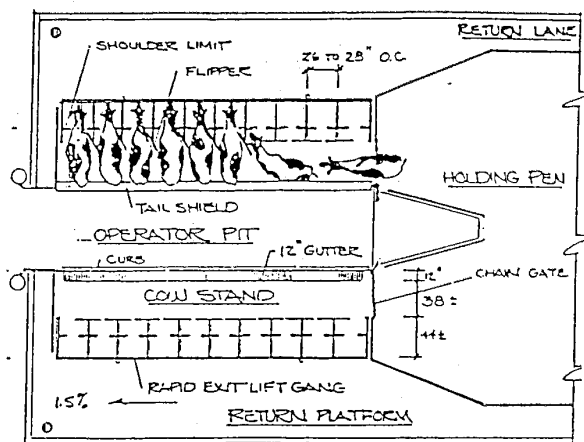
All cows on either side of the pit enter and leave as a group. Newer parlors may have 20 to 30 cows to a side. Some have rapid exit group side release.

### POLYGON



Each of the four sides has separate group entry and exit. Usually each side is a herringbone configuration, but can have angle modifications.

### PARALLEL (DOUBLE 10)

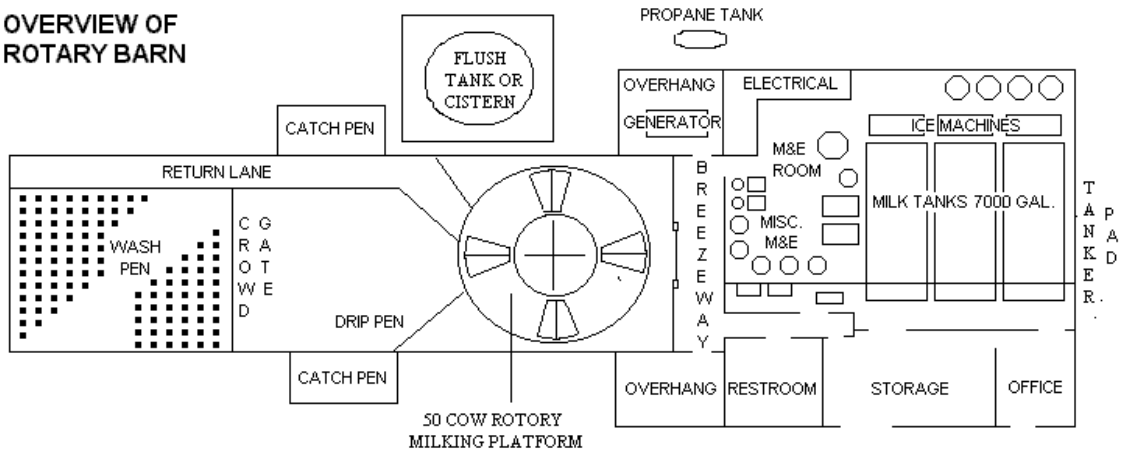


In this design, cows are milked from the rear, rather than the side. Thus, more cows can be milked in a given space than with other designs. Usually a rapid gang exit is present. Typical size is a double 20' to 30'.

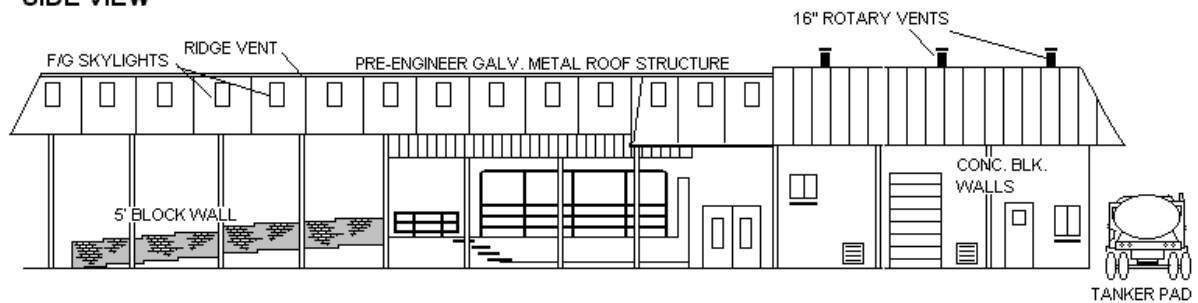
# DAIRY BARNS

## 50-COW ROTARY BARN

### OVERVIEW OF ROTARY BARN



### SIDE VIEW



# DAIRY BARNS

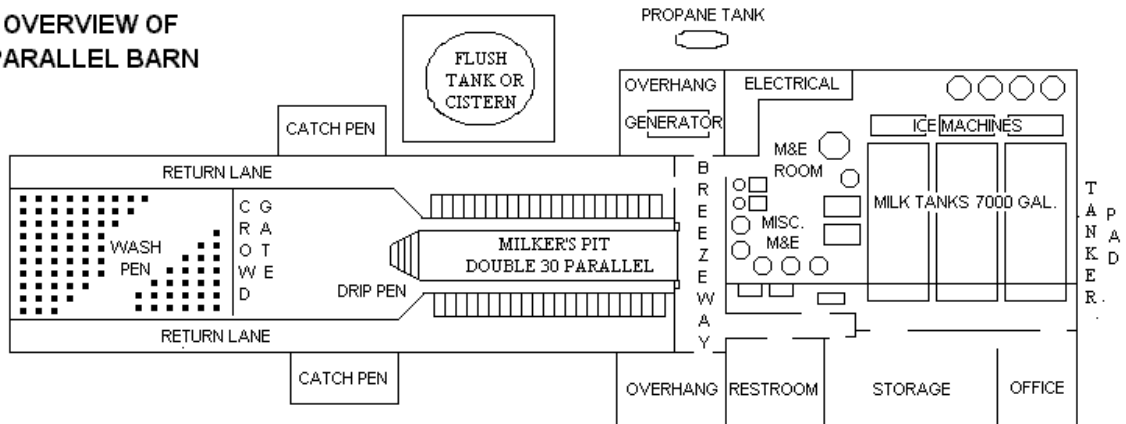
## 50-COW ROTARY MILKING PARLOR



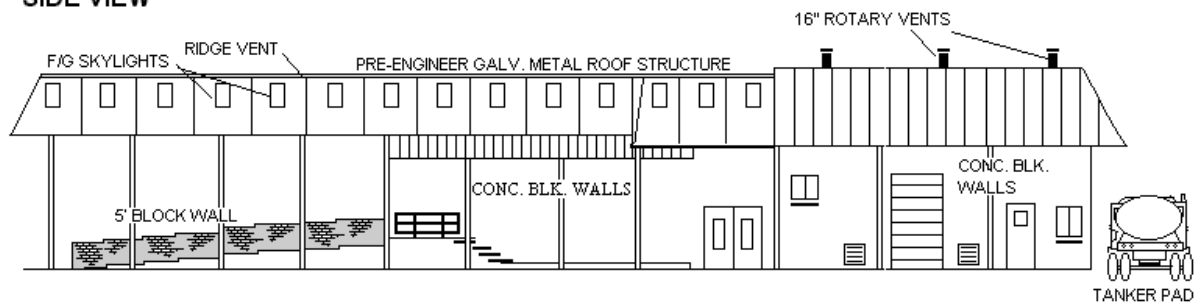
# DAIRY BARNS

## DOUBLE 30 PARALLEL BARN

### OVERVIEW OF PARALLEL BARN



### SIDE VIEW



## DAIRY BARNS

EXTERIOR MODERN HERRINGBONE, PARALLEL, OR ROTARY

AVERAGE QUALITY



Equipment, office, milk room



Milking parlor and wash area

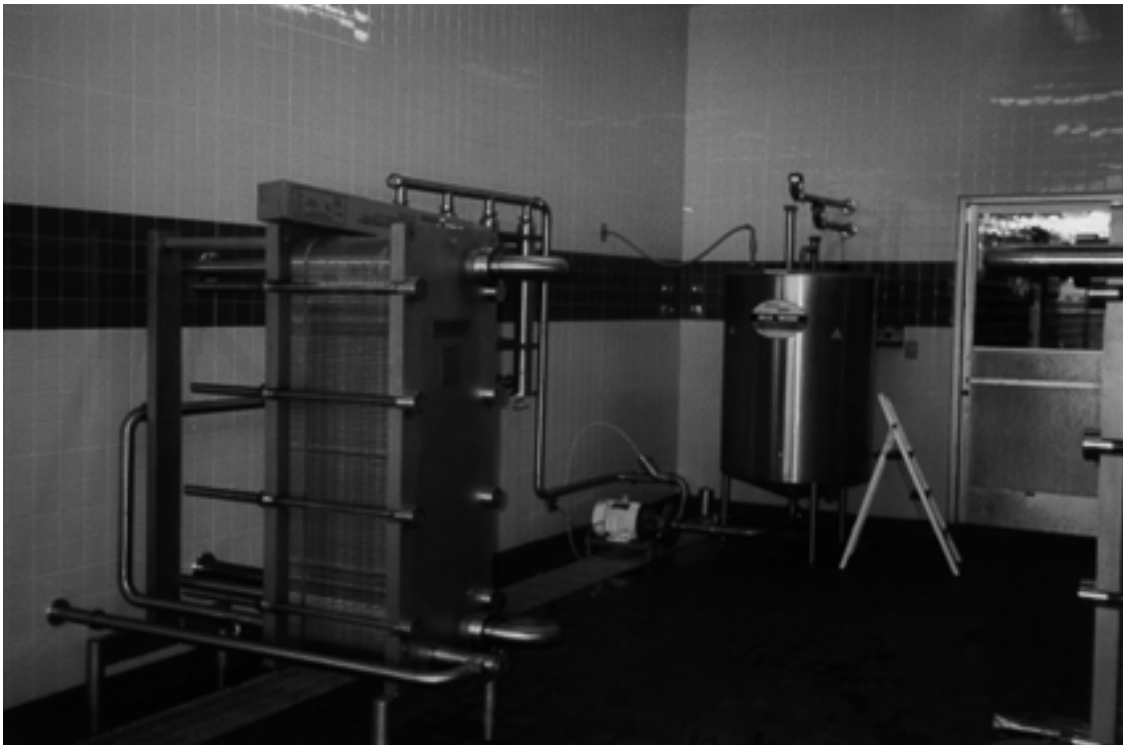
# DAIRY BARNS

INTERIOR MODERN HERRINGBONE, PARALLEL, OR ROTARY

GOOD QUALITY



Milk room



# DAIRY BARNS

INTERIOR MODERN HERRINGBONE, PARALLEL, OR ROTARY

AVERAGE QUALITY



Milk room

## DAIRY BARNs

### MODERN HERRINGBONE, PARALLEL, OR ROTARY

High end of the range in cost is for Sacramento and Northern California

#### EQUIPMENT ROOM, OFFICE, BREEZEWAY, MILK ROOM, RESTROOM, BATH

Components	Average Quality	Good Quality
Foundation	Reinforced concrete	Reinforced concrete
Floors	Concrete slab	Concrete slab, reinforced
Walls	8" concrete block	Concrete block
Exterior	Stucco or concrete block	Stucco and masonry veneer, split face
Roof Structure and Roofing	Average wood frame, corrugated iron roofing	Good wood frame, good quality roofing or steel beams and good steel roofing or tile, skylights, gutters
Windows	Metal sash 10 percent of wall area	Metal sash 10 percent of wall area
Interior	Smooth finish plaster—cove base	Tile
Electrical	Conduit—average fixtures	Conduit—average fixtures
Plumbing	One stainless steel sink, one water heater, one lavatory, one water closet, usual floor drains	One stainless steel sink, one water heater, ¾ bath, vinyl floor and tape textured walls, usual floor drains
<b>Square-Foot Cost</b>	<b>\$38.50 to \$42.00 per square foot</b>	<b>\$42.00 to \$48.00 per square foot</b>

#### MILKING PARLOR

Foundation	6" reinforced concrete
Floors	Concrete slab—well-formed gutters and mangers
Walls	6" or 8" concrete block or reinforced concrete 60" high with 2" x 6"—16" on center framing above, or all concrete block
Roof Structure and Roofing	Average wood frame, corrugated iron roofing or steel beams, good steel roofing, skylights
Windows	Metal sash or metal louvers
Interior	Smooth plaster or tile 36" high
Electrical	Conduit—average fixtures
Plumbing	Usual floor drains and hose bibs
<b>Square-Foot Cost</b>	<b>Without gates and feeding equipment—\$23.50 to \$28.00 per square foot</b>

Total building cost, which includes equipment room, milk room, office, bath, supply, milking parlor, and wash and drip area—Average quality **\$24.00 to \$26.00**  
 Good quality **\$26.00 to \$31.00**



## DAIRY BARNS

### HOLDING, WASH, AND DRIP AREA EQUIPMENT

Floor or Ramp	Sloping concrete with carborundum finish. \$2.75 - \$3.00 per square foot
Walls	5' to 6' high plastered (or similar) interior. \$36.00 per lineal foot
Metal Rail Fence	Welded pipe 7'—10' o.c. in concrete. \$8.50 - \$10.00 per lineal foot
Cable Fence	1 1/4" top rail, 2 7/8" post, 7' o.c. 3 cable—\$7.00 per lineal foot 4 cable—\$7.50 per lineal foot
Gates	54" high, pipe with bracing. \$14 per lineal foot of gate width
Sprinkler System	Hooded Rainbird, including pump. \$100-\$150 per Rainbird, or per double ten barn—20 cows \$5,500 - \$6,500
Roof Structure and Roofing	Pipe supports; wood frame and corrugated iron roofing or steel beams and good steel roofing. \$4.20 - \$5.75 per square foot
Total Area Cost Including All Components	\$14.75 - \$16.80 per square foot



Wash Pen

## DAIRY BARNS

### DAIRY EQUIPMENT

#### PARALLEL STALLS (DOUBLE 30)

2' x 30' parallel stall package includes galvanized reels, reel support post, sequencing panels, galvanized rump rail assembly, kick bar support, entrance gate, and hardware. 2' x 30' parallel drive kit includes air controls, air tubing, rump panels, drive guards, air cylinders, hardware, stainless steel curbing, and top rail. Air operated catch lane gates include air control ram, hardware to mount, step ladders with hand rails (front), and miscellaneous hardware.	\$75,000
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#### VACUUM PUMP

Air vacuum pump with 30 H.P. motor, stand, pulleys, belts, guards, filter assembly, miscellaneous pipe valves, and electrical.	\$9,000
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#### PIPELINE AND EQUIPMENT

Claws with pulsators and pulsator controller, master control panel, 2 H.P. milk pump, milk receiver, jetter assembly and hose, fresh air kit, C.I.P. sink. Also includes all stainless steel pipelines, elbows, valves, all PVC lines, electrical wiring and panels, and miscellaneous hardware.	\$75,000
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#### MILK TRANSFER SYSTEM

Control assembly and miscellaneous equipment.	\$4,000
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#### DETACHERS

Air operated retraction with both manual and automatic operation, indicator lights indicating milking mode and milk flow, air operated shutoff valve/sensor combination, all related electric wiring, air filter, and hardware.	\$65,000
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#### MILK TANKS (7,000 GALLON)

2 stainless steel 7,000-gallon tanks with agitators and wash pumps. Includes control panel, calibration gauge, temperature recorder with probe assembly, hot milk alarm, miscellaneous piping, and electrical.	\$92,000
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#### REFRIGERATION SYSTEM

Freon compressor, air condensers, related hardware, pipes, valves, and electrical. Plate cooler with 100 plates and all hardware.	\$41,000
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Above costs include tax and labor

## DAIRY BARNS

### DAIRY EQUIPMENT

#### HEAT RECOVERY SYSTEM

Heat recovery system and all hardware.	\$9,000
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#### HOT WATER SYSTEM

Boiler with insulated 500-gallon storage tank, insulated piping, and electrical.	\$12,000
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#### SPRINKLER PEN HARDWARE

Pumps, Rainbird, and all related pipelines and miscellaneous hardware.	\$17,000
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#### AIR COMPRESSOR

10 H.P. air compressor with 120-gallon tank. Includes miscellaneous hardware and electrical.	\$7,000
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#### ELECTRIC OR AIR CROWD GATE

30 to 40 foot electric gate with track and control kit, motor, panel, and electrical.	\$13,000 – \$16,000
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Above costs include tax and labor

#### EQUIPMENT ONLY (Including tax and labor)

Double 30' Parallel	Total - \$410,000 to \$430,000
Double 20'-24' Herringbone	Total - \$378,000 to \$400,000
Double 18' Parallel	Total - \$305,000 to \$325,000
50-Cow Rotary Barn	Total - \$510,000 to \$530,000

## DAIRY BARNS

### FREESTALL BARN

#### STANCHIONS, LOOPS, AND FENCES

Foundation	Reinforced concrete
Floors	Sloping concrete with dirt in loop areas. Concrete drive lanes and flush areas.
Walls	Open; poles with steel supports
Roof Structure	Steel frame with steel cover; good quality, with gutters
Electrical	Minimum lighting
Plumbing	Water troughs in each pen with underground flushing
Stanchions	Steel; self locking
Fencing	Cable with steel or wood posts
Capacity	250 to 400 cows; one stanchion per cow
Cost	<b>\$650 to \$750 per cow or \$6.50 to \$7.50 per square foot</b>

# DAIRY BARNS

## FREESTALL BARN



# DAIRY BARNS

## HOSPITAL BARN

### AVERAGE QUALITY

Floors	Concret slab
Walls	Light steel poles, all sides open
Roof	Average wood frame or light metal, with metal cover
Interior	Several small pens with metal pipe fencing
Electrical	Average light fixtures
Plumbing	Concrete water troughs
<b>Cost</b>	<b>\$5.70 to \$6.00 per square foot</b>

Good quality add 20 percent



Hospital Barn – Average Quality



## DAIRY BARNS

### CORRALS

Components	Cost
Concrete Flatwork Large areas/not reinforced	3½" to 4½"—\$1.60 to \$2.10 per square foot 6"—\$1.80 to \$2.20 per square foot
Curbs	12"—\$6.00 per lineal foot 24"—\$7.00 per lineal foot
Cable Fence	2 3/8" top rail, 2 7/8" post—10' o.c. 3 cable—\$7.00 per lineal foot 4 cable—\$7.50 per lineal foot
Concrete Water Tank	\$350 each
Steel Stanchions	\$36.00 to \$40.00 each \$16.00 to \$20.00 per lineal foot
Steel Self-Locking Stanchions	\$38.00 to \$42.00 each \$19.00 to \$21.00 per lineal foot
12" PVC Flush Line	\$9.00 per foot
Sump Pumps	3 HP \$2,600.00 5 HP \$3,500.00
Floating Agitator Pump	75 HP \$14,000 to \$16,000
Hay Shelters	\$4.25 - \$5.25 per square foot
Loafing Sheds	Wood—\$3.50 - \$4.50 per square foot Steel—\$4.00 - \$5.25 per square foot

### COMMODITY BARNS

	Per Square Foot
With Dividers	\$8.25 - \$11.25
Without Dividers	\$7.00 - \$9.00



Commodity Barn with Dividers – Average Quality

## DAIRY BARNS

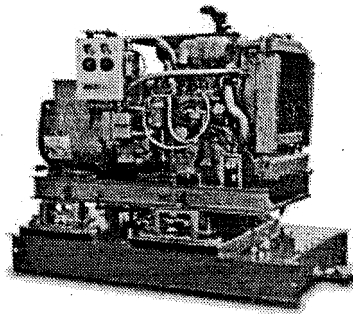
### HEAT RECOVERY SYSTEM

\$5,000 - \$5,500

Cost includes evaporator, compressor, exchanger, condenser, and storage tanks.

### AUXILIARY POWER SYSTEMS

<u>KW</u>	<u>Cost New</u>
100	\$19,000 - 22,000
150	27,000 - 31,000
230	30,000 - 35,000
300	38,000 - 42,000
350	40,000 - 46,000



Rebuilt Units - Deduct 25%

Used Units - Deduct 45%

### ICE BANKS

Typical unit is 7' x 10' and 10' high with galvanized steel exterior, and 10,000 pound capacity. The liquid is cooled by freon circulating through copper tubing. \$50,000 - \$60,000

Cost includes compressor, all water lines, and refrigeration.



## DAIRY BARNS

### MISCELLANEOUS

#### CURBS

	Per Lineal Foot
7" x 20"	\$6.00
7" x 16"	\$5.00
6" x 8"	\$4.00

#### CABLE FENCE

	Per Lineal Foot
2 3/8" top rail with	3 cable—\$7.00
2 7/8" post 10' o.c.	4 cable—\$7.50
	5 cable—\$8.00

#### SOLID RAIL FENCE

	Per Lineal Foot
(4) 2 3/8" rails with	\$9.00 - \$9.50
2 7/8" post 10' o.c.	

#### TANKER PAD

	Per Square Foot
6" rebar reinforced concrete	\$2.20 - \$2.45
with footings	

#### WATER TROUGHS

Concrete Water Troughs - 2' x 12'	\$325
Precast Fiberglass - 2' x 16'	\$350

#### CORRAL SHADES

	Per Square Foot
Pipe poles, wood frame roof	\$1.60 - \$2.00
with metal cover	

## DAIRY BARNS

### MISCELLANEOUS

#### SEPTIC TANKS

1,000 – 1,500 gallon with lines	\$3,500 - \$4,000
Cistern - per gallon	55¢

#### FEEDLANE STANCHIONS WITH CURB

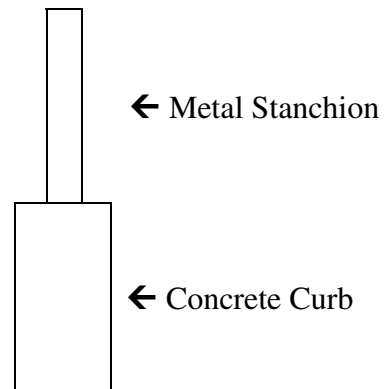
Galvanized stanchions, 5-hole/10'  
Cow-type self-locking with release  
with 2 7/8" post in concrete curb

Cost Per Lineal Foot: **\$27.00**

Additional concrete (Per Square Foot):

Drivelane 6" reinforced - **\$1.75 - \$2.10**

Walklane 4" concrete - **\$1.55 - \$1.75**



Feedlane Stanchions

## DAIRY BARNS

## SILAGE PITS

Tilt-up of 6" concrete or 8" reinforced concrete block, 8' high, and enclosed on three sides with 6" concrete slabs.

<u>Size</u>	<u>Price Per Square Foot</u>
75 x 100	\$3.90
100 x 200	\$3.25
100 x 300	\$3.10



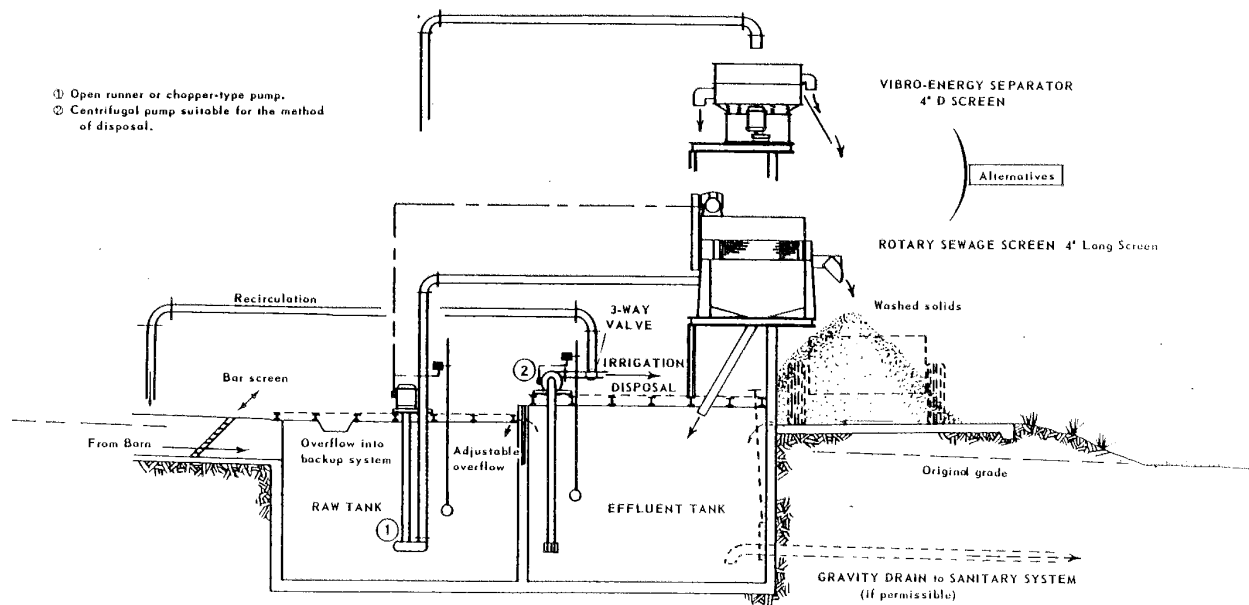
Concrete Silage Slab Only

5 ½" to 6" reinforced with footings - **\$1.90 to \$2.20** with footings

# DAIRY BARN

## LIQUID MANURE SYSTEMS

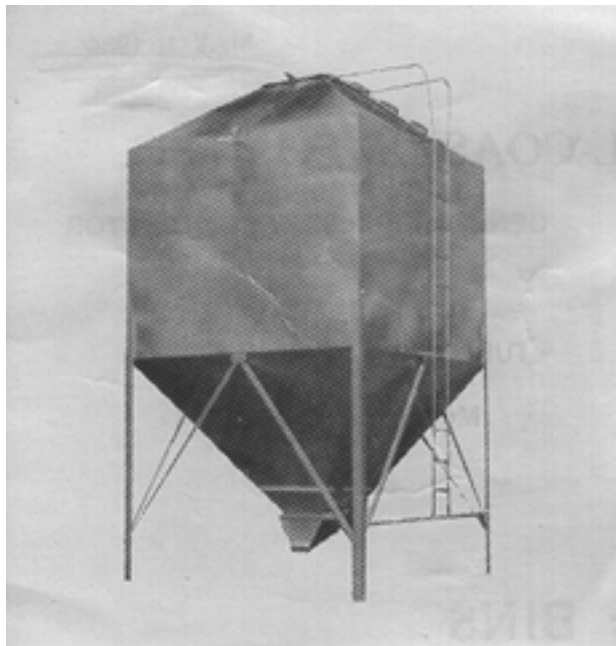
Cost includes tanks, pumps, screens, valves, pipes, sump, and drainage system, but excludes cost of all holding ponds or lagoons. Typically one unit per 800 to 1,000 cows. **\$32,000 - \$40,000**



## DAIRY BARNS

### PAINTED STEEL BULK FEED TANKS

<u>Components</u>	<u>Cost</u>
4 Ton	\$1,600
9 Ton	2,300
10.5 Ton	2,450
13 Ton	2,700
15 Ton	3,000
20 Ton	3,700
25 Ton	4,100
31 Ton	4,700
34 Ton	4,900



### ADDITIVES AND ACCESSORIES

Feeder lines (Per lineal foot)	\$ 6.90
Partition	300.00
Ladder	75.00 -125.00
Augar	165.00 - 200.00

## DAIRY BARNS

### GRADE "B" BARNS

Use upper end of cost range for Sacramento Valley and north

#### MILK HOUSE

Foundation	Concrete
Floors	Concrete slab
Walls	6" or 8" concrete block 36" high with 2" x 4"—16" on center framing above
Roof	Average wood frame, corrugated iron, or aluminum cover
Windows	Metal sash or metal louvers, 5 percent of wall area
Interior	Smooth finish plaster
Electrical	Fair fixtures
Plumbing	One wash basin
<b>Square-Foot Cost</b>	<b>\$30.00 to \$37.00 per square foot (including breezeway)</b>

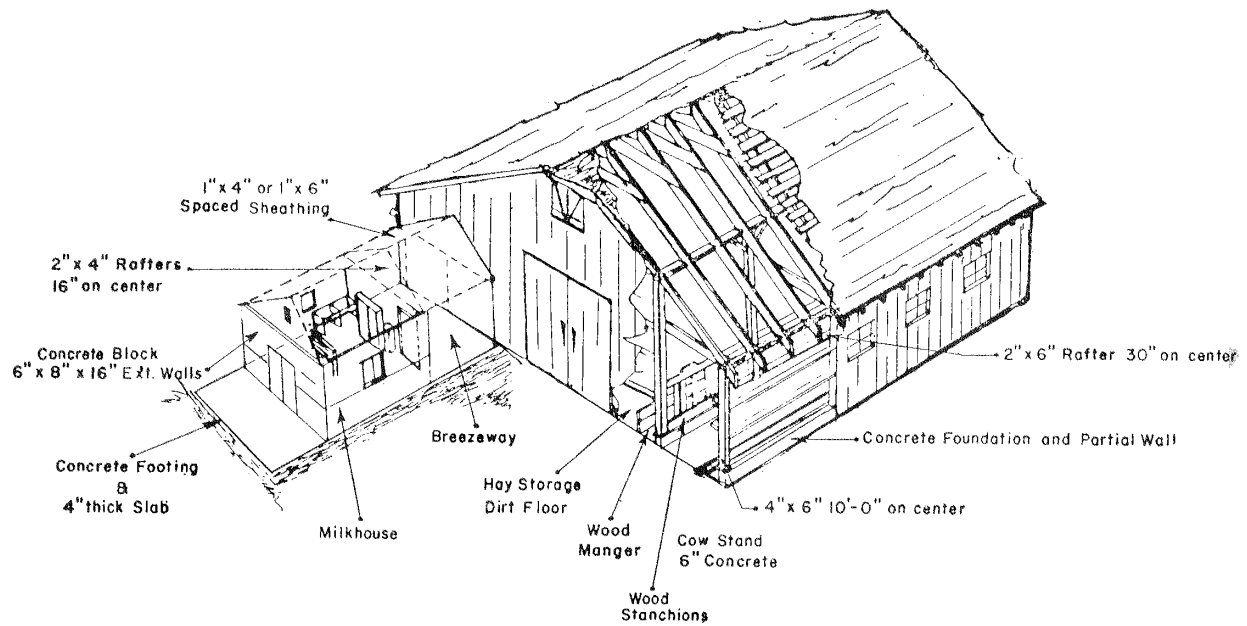
#### MILKING BARNS

Foundation	Light concrete
Floors	Concrete—cow stands
Walls	Box frame, 4" x 6"—10' on center
Roof	Average wood frame, wood shingles, corrugated iron, or aluminum cover
Windows	Barn sash
Interior	Unfinished
Electrical	None
Plumbing	None
Stanchions	Wood stanchions
<b>Square-Foot Costs</b>	<b>\$12.75 to \$15.85 per square foot</b>

Building costs do not include milking equipment

# DAIRY BARNS

## GRADE "B" BARNs



**TYPICAL GRADE "B" DAIRY BARN**

## DAIRY BARNS

### STANCHION BARNS

High end of range in cost is for Sacramento and Northern California

#### MILK, WASH, AND EQUIPMENT ROOMS

Foundation	Reinforced concrete
Floors	Concrete slab
Walls	6" or 8" concrete block 36" high with 2" x 4"—16" on center framing above
Roof	Average wood frame, corrugated iron, or aluminum cover
Windows	Metal sash or metal louvers, 10 percent of wall area
Interior	Smooth finish plaster—cove base
Electrical	Conduit—average fixtures
Plumbing	One wash basin—usual floor drains
<b>Square-Foot Cost</b>	<b>\$32.00 to \$38.00 per square foot (including breezeway)</b>

#### MILKING BARNS

Foundation	Reinforced concrete
Floors	Concrete—well-formed gutters and mangers
Walls	6" or 8" concrete block 36" high with 2" x 4"—16" on center framing above
Roof	Average wood frame, corrugated iron, or aluminum cover
Windows	Metal sash or metal louvers
Interior	Smooth plaster 36" high
Electrical	Conduit—average fixtures
Plumbing	Usual floor drains and hose bibs
Stanchions	Metal stanchions
<b>Square-Foot Cost</b>	<b>\$23.40 to \$26.70 per square foot</b>

#### FEED ROOM

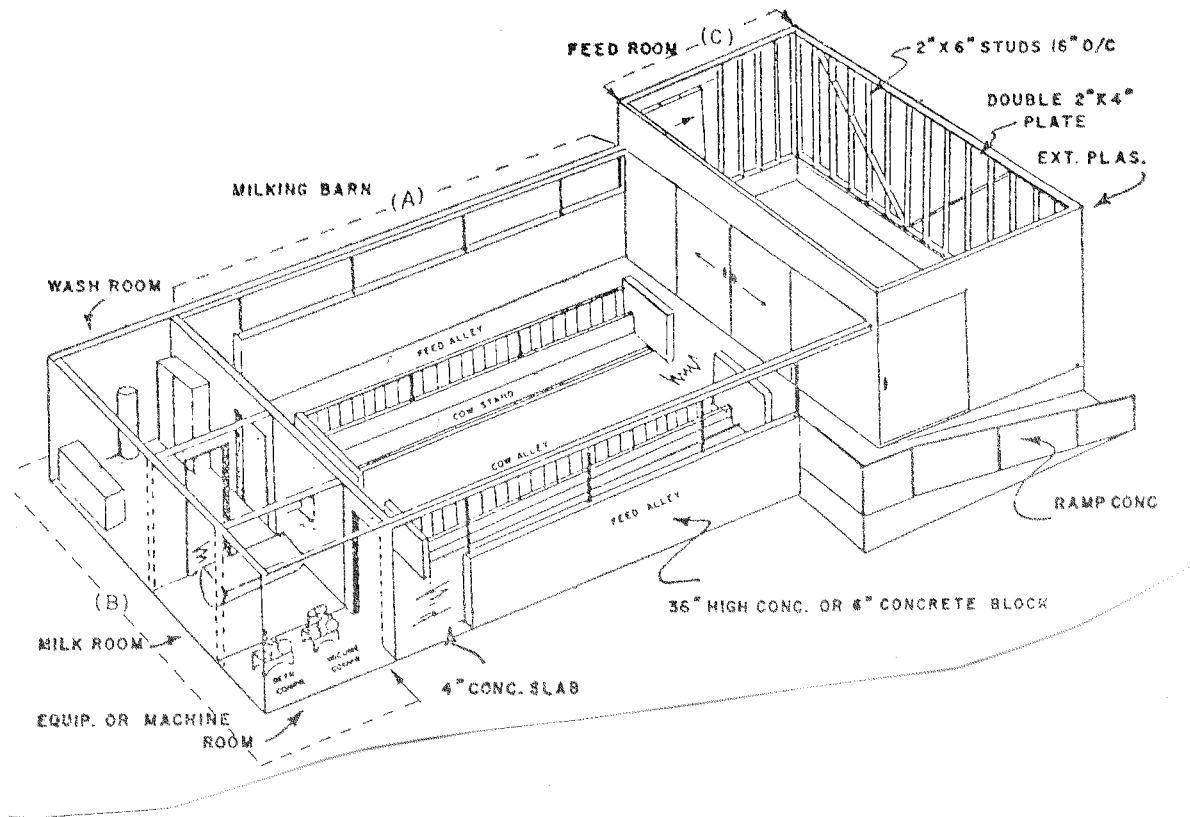
Foundation	Reinforced concrete
Floors	Concrete slab
Walls	2" x 4" or 2" x 6"—16" on center framing
Roof	Average wood frame, corrugated iron, or aluminum cover
Windows	None
Interior	Unfinished
Electrical	Conduit—average fixtures
Plumbing	None
<b>Square-Foot Cost</b>	<b>\$12.85 to \$21.40 per square feet</b>

Building costs do not include milking equipment



# DAIRY BARNS

## STANCHION BARN



### Component Parts of This Dairy

- A. Milking Barn
- B. Feed Room
- C. Milk, Wash, and Equipment Rooms

## TYPICAL STANCHION BARN

## DAIRY BARNS

### WALK-THROUGH TYPE

High end of the range in cost is for Sacramento and Northern California

#### MILK, WASH, AND EQUIPMENT ROOMS

Foundation	Reinforced concrete
Floors	Concrete slab
Walls	6" or 8" concrete block 36" high with 2" x 4"—16" on center framing above or all concrete block
Roof	Average wood frame, corrugated iron, or aluminum cover
Windows	Metal sash or metal louvers, 10 percent of wall area
Interior	Smooth finish plaster—cove base
Electrical	Conduit—average fixtures
Plumbing	One wash basin—usual floor drains
<b>Square-Foot Cost</b>	<b>\$26.75 to \$28.90 per square foot (including breezeway)</b>

#### MILKING BARNS

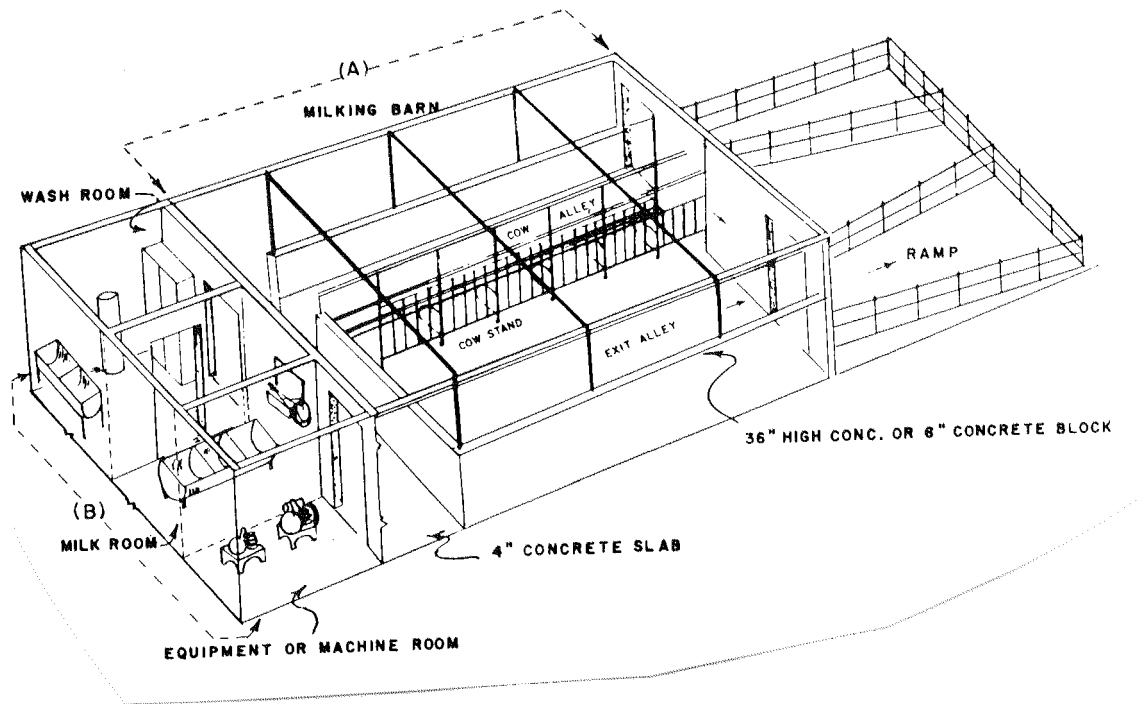
Foundation	Reinforced concrete
Floors	Concrete—well-formed gutters and mangers
Walls	6" or 8" concrete block 36" high with 2" x 4"—16" on center framing above, or all concrete block
Roof	Average wood frame, corrugated iron, or aluminum cover
Windows	Metal sash or metal louvers
Interior	Smooth plaster 36" high
Electrical	Conduit—average fixtures
Plumbing	Usual floor drains and hose bibs
Stanchions	Metal stanchions
<b>Square-Foot Cost</b>	<b>\$25.70 to \$27.85 per square foot</b>

Building costs do not include milking equipment

# DAIRY BARNS

## WALK-THROUGH TYPE

### TYPICAL WALK-THROUGH BARN



Component Parts of This Dairy

- A. Milking Barn
- B. Milk, Wash, and Equipment Rooms

## **AH 534.30: POULTRY HOUSES**

This section contains specifications and costs for various poultry structures and equipment including the following:

- Conventional lay cage houses
- Modern controlled environment houses
- High-rise houses
- Deep-pit houses
- Breeding barn

## POULTRY HOUSES

### CONVENTIONAL LAY CAGE HOUSES

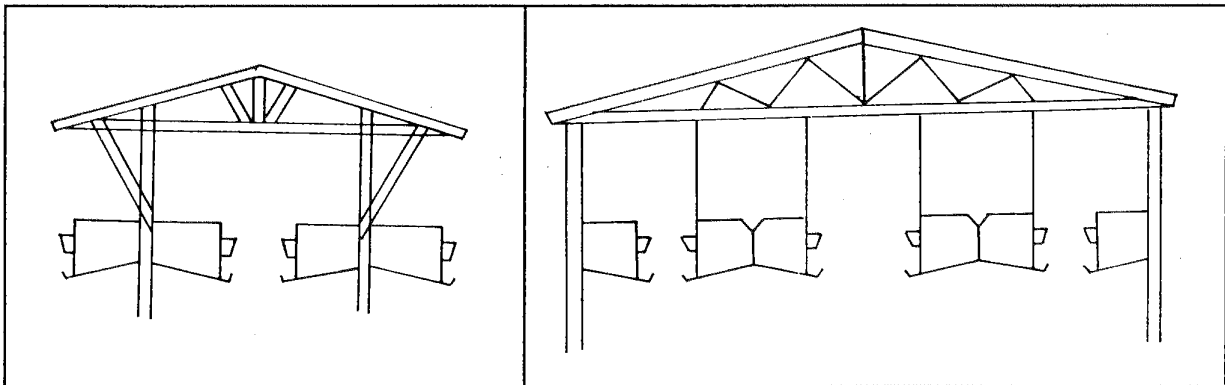
Components	Fair Quality	Average Quality	Good Quality
Foundations	Wood piers	Concrete piers	Thickened slab
Floors	Dirt	Dirt with 4' concrete walkways	2" concrete
Frame	Light wood frame	Average wood frame	Light steel or average wood frame
Roof Cover	Light aluminum or composition	Light aluminum or composition	Aluminum or 28-gauge galvanized steel
Exterior	Wood lath	Vinyl curtains	Plywood
Lighting	Minimum system manual controls	Average system automatic controls	Good system, fluorescent automatic controls
Plumbing	Fair system	Average system	Good system
Insulation	None	None	Roof only
<b>Basic Building Cost Per Square Foot</b>	<b>\$3.10 - \$3.50</b>	<b>\$3.50 - \$4.60</b>	<b>\$5.40 - \$6.50</b>

Basic building costs are for building only and include only those components specified. The cost of all items of equipment such as cages, drinking water systems, fogging systems, feeding systems, egg-gathering systems, heating and cooling systems, etc., must be added to basic building costs to arrive at total cost. See Assessors' Handbook Section 534.30, page 10, for poultry house equipment costs.

## POULTRY HOUSES

### EQUIPMENT - CONVENTIONAL LAY CAGE HOUSES

Components	Fair Quality House	Average Quality House	Good Quality House	Good Quality House
Cages	12" x 20" single deck	12" x 20" single deck	12" x 20" single deck	12" x 20" double deck
Watering System	Simple "V" trough	Simple "V" trough	Automatic cup system	Automatic cup system
Feeding System	V trough	V trough	V trough	Automatic system
Egg-Gathering System	Manual	Manual	Manual	Manual
Cooling	Simple fogging system	Simple fogging system	Pad and fan system	Pad and fan system
Cost Per Square Foot	\$5.40 to \$7.25	\$6.35 to \$7.95	\$8.40 to \$10.00	\$14.10 to \$16.00
Cost Per Bird	\$5.25 to \$6.85	\$6.35 to \$7.85	\$8.40 to \$10.00	\$13.95 to \$15.75



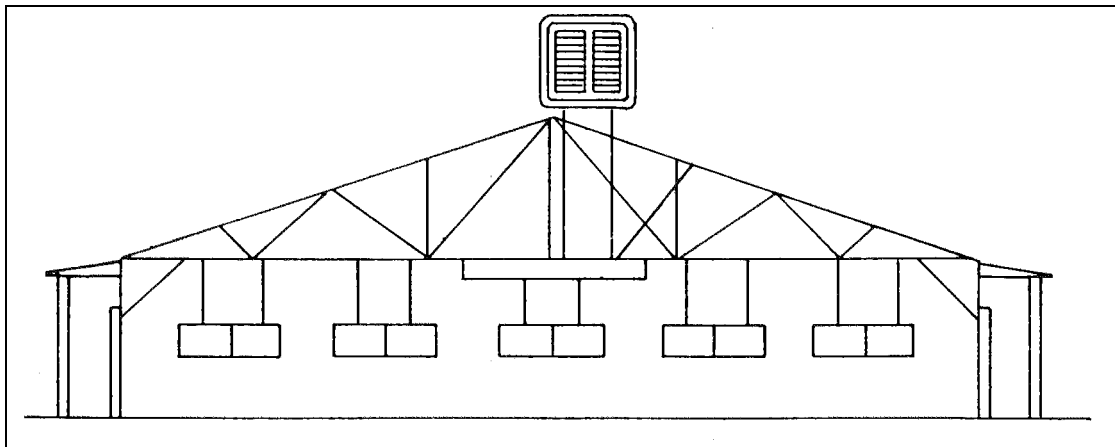
**TYPICAL CROSS SECTIONS**

## POULTRY HOUSES

### MODERN CONTROLLED ENVIRONMENT HOUSES

Foundation	Concrete
Floor	3 1/2" concrete slab
Wall Frame	2" x 4"—24" on center or 6" x 6" —10' centers
Roof Frame	Wood trusses with 2" x 4" purlins—24" on center
Exterior	2-rib aluminum or corrugated iron, 28-gauge galvanized steel
Interior	4" fiberglass roll with aluminum foil facing or 3/4" Styrofoam
Lighting	Fluorescent or good automatic incandescent system
Plumbing	Good basic system
<b>Basic Building Cost Per Square Foot</b>	<b>\$8.30 to \$9.95</b>

Basic building costs are for building only and include only those components specified. The cost of all items of equipment such as cages, drinking water systems, fogging systems, feeding systems, egg-gathering systems, heating and cooling systems, etc., must be added to basic building cost to arrive at total cost. See Assessors' Handbook Section 534.30, page 10, for poultry equipment costs.



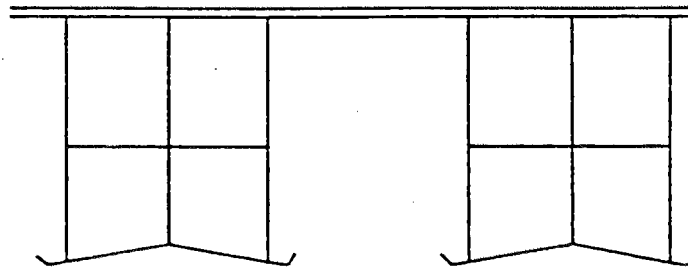
**CROSS-SECTIONS - CONTROLLED ENVIRONMENT HOUSE**

## POULTRY HOUSES

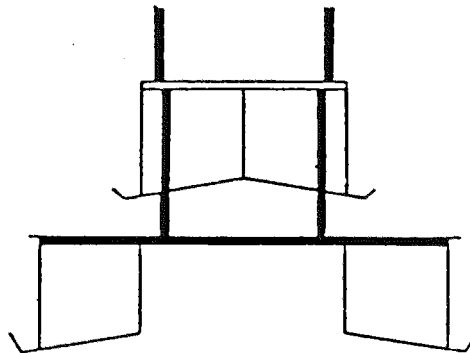
### EQUIPMENT - MODERN CONTROLLED ENVIRONMENT HOUSES

Components	Single Deck	Stair Step
Cages	12" x 20" single deck	12" x 20" double deck
Watering System	Automatic cup system	Automatic cup system
Feeding System	Manual	Manual
Egg-Gathering System	Manual	Manual
Cooling	Pad and fan system	Pad and fan system
Heating	None	None
<b>Total Square-Foot Cost</b>	<b>\$18.95 to \$19.95</b>	<b>\$19.95 to \$22.10</b>
<b>Total Cost Per Bird</b>	<b>\$12.60 to \$13.40</b>	<b>\$13.40 to \$14.70</b>

Cost includes building and equipment



**SINGLE-DECK CAGE SYSTEM**



**STAIR-STEP CAGE SYSTEM**

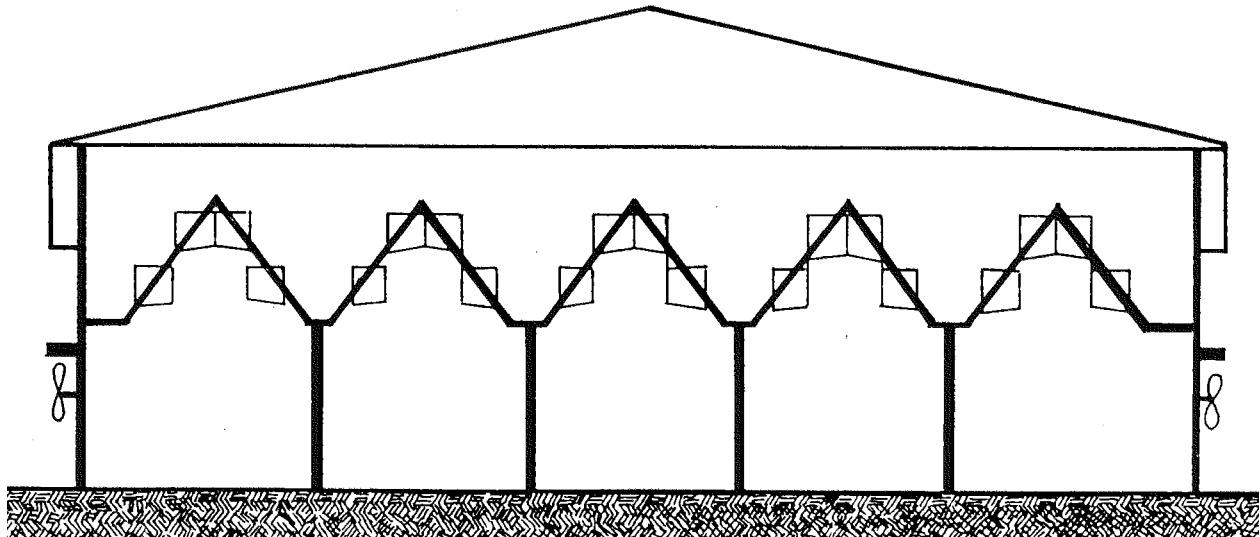


## POULTRY HOUSES

### HIGH-RISE HOUSES

Foundation	Concrete piers
Floors	Dirt
Wall Frame	2" x 4"—24" on center
Roof Frame	Wood trusses with 2" x 4" purlins—24" on center
Exterior	28-gauge corrugated galvanized steel
Interior	3/4" Styrofoam
Lighting	Fluorescent or good incandescent
Plumbing	Good basic system
<b>Basic Building Cost Per Bird</b>	<b>\$8.60 to \$10.70</b>

Basic building costs are for building only and include only those components specified. The cost of all items of equipment such as cages, drinking water systems, fogging systems, feeding systems, egg-gathering systems, heating and cooling systems, etc., must be added to basic building cost to arrive at total cost. See Assessors' Handbook Section 534.30, page 10, for poultry equipment costs.



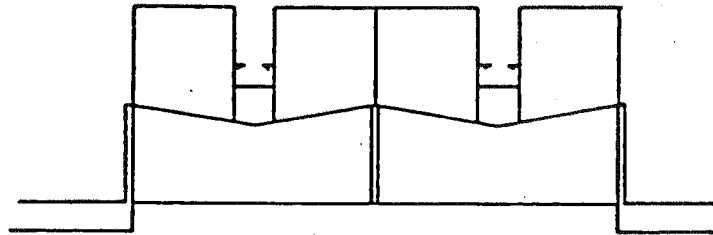
**CROSS SECTION - HIGH-RISE HOUSE**

## POULTRY HOUSES

### EQUIPMENT - HIGH-RISE HOUSES

Components	Single Deck	Stair Step
Cages	12" x 20" single deck	12" x 20"
Watering System	Automatic cup system	Automatic cup system
Feeding System	Automatic system	Automatic system
Egg-Gathering System	Automatic system	Automatic system
Cooling	Negative pressure system	Negative pressure system
Heating	None	None
<b>Total Square-Foot Cost</b>	<b>\$16.85 to \$18.95</b>	<b>\$20.50 to \$21.00</b>
<b>Total Cost Per Bird</b>	<b>\$10.50 to \$12.60</b>	<b>\$13.70 to \$14.45</b>

Cost includes building and equipment



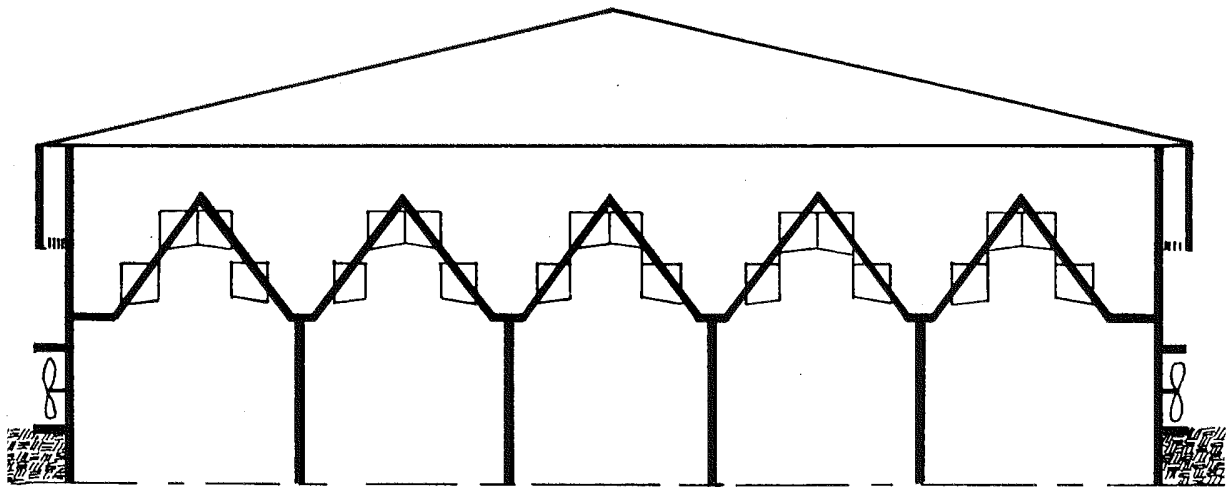
**FLAT-DECK CAGE SYSTEM**

## POULTRY HOUSES

### DEEP-PIT HOUSES

Foundation	Concrete piers
Floors	Concrete with waterproof membrane
Wall Frame	2" x 4"—24" on center
Roof Frame	Wood trusses with 2" x 4" purlins—24" on center
Exterior	28-gauge corrugated galvanized steel
Interior	3/4" Styrofoam
Lighting	Fluorescent or good incandescent
Plumbing	Good basic system
<b>Total Square-Foot Cost</b>	<b>\$9.15 to \$10.70</b>

Basic building costs are for building only and include only those components specified. The cost of all items of equipment such as cages, drinking water systems, fogging systems, feeding systems, egg-gathering systems, heating and cooling systems, etc., must be added to basic building cost to arrive at total cost. See Assessors' Handbook Section 534.30, page 10, for poultry equipment costs.



**CROSS SECTION - DEEP-PIT HOUSE**

## POULTRY HOUSES

### EQUIPMENT - DEEP-PIT HOUSES

Components	Flat Deck	Stair Step
Cages	12" x 20" single deck	12" x 20"
Watering System	Automatic cup system	Automatic cup system
Feeding System	Automatic system	Automatic system
Egg-Gathering System	Automatic system	Automatic system
Cooling	Negative pressure system	Negative pressure system
Heating	None	None
<b>Total Square-Foot Cost</b>	<b>\$18.90 to \$21.00</b>	<b>\$21.00 to \$25.20</b>
<b>Total Cost Per Bird</b>	<b>\$12.60 to \$14.20</b>	<b>\$14.20 to \$16.85</b>

Cost includes building and equipment

## POULTRY HOUSES

### EQUIPMENT

Components	Serving One Row of Cages	Serving Two Rows of Cages
Automatic Feeders	\$1.70 per bird	\$ .80 per bird
Automatic Egg-Gathering System	\$1.30 per bird	\$ .62 per bird
Automatic Water Cup System	\$1.29 per bird \$4.12 per cup	\$ .62 per bird \$2.82 per cup
"V" Water Trough	\$ .26 per bird	\$ .19 per bird
16" Feed Trough	\$ .36 per bird	\$ .25 per bird
Foggers	PVC	\$1.03 per linear foot
Roof Sprinklers		\$1.96 per linear foot
Evaporative Coolers		\$900 each \$1.00 per square foot of building
Fans 30" 36" 48"		\$500 each \$675 each \$750 each
Negative Pressure Air square Conditioning System		\$ .95 to \$1.05 per foot of building area
Cooling Pads in Wall		\$ .62 per square foot of surface area
Heating Systems		\$1,240 per ton
Cages 12" x 20" or 18"		\$6.45 each \$1.60 per bird

To be added to basic building costs

## POULTRY HOUSES

### POULTRY HOUSE

Size: 50' x 450'—22,500 square feet  
No foundation  
Box construction, 4" x 6" posts on 10' centers  
Plywood ends  
Chicken wire siding with curtains  
2" x 8" roof rafters on 10' centers  
Roof cover—galvanized steel  
Dirt floors  
Plumbing and electric systems—extra

**Cost: \$2.80 per square foot**

---

Same structure without chicken wire sides and curtain

**Cost: \$2.50 per square foot**

### BREEDING BARN

Size: 40' x 360'—14,400 square feet  
Concrete foundation  
Box construction, 6" x 6" posts on 10' centers—8' high  
Exterior: wood siding on the ends and 4' on sides—4' chicken wires on sides, and curtains  
2" x 8" roof rafters on 10' centers  
Roof cover: 28-gauge galvanized steel  
Concrete floors  
Workroom on one end, 10' x 40'  
Plumbing and electrical systems—extra

**Cost: \$3.90 per square foot**

## **POULTRY HOUSES**



**BREEDING OR BROILER BARN**

## **AH:534.61: IRRIGATION SYSTEMS**

The following costs of irrigation system components have been tabulated from information gathered, for the most part, in the San Joaquin and Sacramento Valleys. Costs have been collected for only the more widely used components. Many areas will have types of equipment not usually found in other locations. These costs should be checked locally.



## IRRIGATION SYSTEMS

### CONCRETE PIPE—INSTALLED

Size in Inches	Cost Installed Per Lineal Foot		Vertical Stand Pipe Including Base Installed Cost Per Foot of Height	
	Fresno Area	Sacramento North	Fresno Area	Sacramento North
8	\$5.80	\$5.90	\$12.75	\$13.25
10	5.95	6.05	15.30	16.30
12	6.45	6.55	16.30	17.50
14	6.85	7.15	19.40	20.50
16	7.45	8.15	24.50	25.50
18	8.80	9.15	33.15	34.50
20	10.20	10.60	35.00	38.50
24	14.75	15.70	53.00	60.00
30			94.00	99.00
36			107.00	117.00
42			153.00	163.00
48			209.00	220.00

The above prices are for installations over 700 feet in length. Adjust the above prices for installations less than 700 feet by the following amount.

#### Length of Pipe

#### Add to All Sizes

Up to 100'	\$4.00 per foot
100' to 200'	3.50 per foot
200' to 300'	3.00 per foot
300' to 400'	2.10 per foot
400' to 500'	1.90 per foot
500' to 600'	1.25 per foot
600' to 700'	.55 per foot

## IRRIGATION SYSTEMS

### **PRESSURE BOXES** (Reinforced concrete with capped top)

Size	Price Per Lineal Foot of Height
24"	\$310
30"	375
36"	470

### **STAND PIPE INCLUDING THE BASE**

Size	6'	9'	12'	15'	18'
24"	\$320	\$ 477	\$ 636	\$ 796	\$ 867
30"	525	750	970	1,198	1,422
36"	587	837	1,086	1,340	1,590
42"	683	980	1,270	1,566	1,860
48"	900	1,285	1,672	2,090	2,380

### **VENT PIPE—PLASTIC**

Size	9' Height Limit
2"	\$5.50 per foot
3"	8.00 per foot
4"	10.00 per foot

### **VENT PIPE—STEEL**

Size	9' Height Limit
2"	\$8.00 per foot
4"	9.50 per foot
6"	13.00 per foot
8"	17.00 per foot
10"	21.00 per foot
12"	34.00 per foot

### **ADD HOOK-UP** (When new concrete pipe is connected to old concrete pipe, add the following)

Size	Add
8", 10", and 12"	\$120
14", 16", and 18"	150
20" and 24"	175

## IRRIGATION SYSTEMS

### P.V.C. PIPE

Cost includes components and installation, but not hook-up to pump. As pressure requirements rise, the pipe becomes more costly.

#### P.V.C. PIPE—INSTALLED (PER LINEAL FOOT)

Size	80 PSI Low Head (Flood)	100 P S I (Sprinkler)
6"	\$2.73	\$3.95
8"	3.25	4.30
10"	4.25	5.35
12"	5.50	6.80
15"	7.70	9.00
18"	8.45	-

P.V.C. hook-up to pump—includes relief valves, check valves, dresser couplings, elbows, and labor.

#### ADD HOOK-UP

Size	Cost
6"	\$600
8"	680
10"	1,075
12"	1,550

#### VALVE, SADDLE, AND RISER (FOR SURFACE LATERALS)

Size	Sprinkler	Flood
4"	\$ 75	\$ 80
8"	-	139
10"	-	170
12"	-	220
14"	-	290

## IRRIGATION SYSTEMS

### ALUMINUM PIPE

Aluminum pipe costs include sales tax, but exclude installation costs due to their portable nature.

Main Lines Per Linear Foot	Diameter				
Ring Lock Type	6"	8"	10"	12"	
	40' joints <u>without</u> valve	\$4.00	\$5.35	\$6.20	\$7.30
	40' joints <u>with</u> valve	4.50	6.30	7.35	8.70
Latch Type	3"	4"	6"		
	30' joints <u>without</u> valve	\$1.22	\$2.10	\$3.00	

### SPRINKLER LINES

18" Risers—30' lengths      3"—\$1.45 per linear foot      4"—\$2.30 per linear foot

### FITTINGS

Valve Openers		End Plugs		Elbows	
Size	Cost	Size	Cost	Size	Cost
3"	\$70	6"	\$40	6"	\$ 76
4"	71	8"	50	8"	100
		10"	75	10"	140

# IRRIGATION SYSTEMS

## IRRIGATION VALVES

Flood valves are set near the top or flush on top of a concrete pipe riser. Several types are in general use, i.e., Yakima and Alfalfa. They are made with either a solid arch or a removable arch. The removable arch type is more expensive, but it allows for replacement of the arch without complete valve removal when breakage occurs. The solid arch is usually found to be a Yakima and the removable arch is an Alfalfa.

### FLOOD VALVES

Size in Inches	Solid Arch Yakima	Size in Inches	Alfalfa
3 x 8	\$ 62		
4 x 8	65	8 x 8	\$ 120
5 x 8	70	10 x 10	150
6 x 10	90	12 x 12	180
8 x 12	108	14 x 14	210
10 x 14	150	16 x 16	280
12 x 16	180	18 x 18	375
14 x 18	220	20 x 20	470
16 x 20	340	24 x 24	695
18 x 20	370		
20 x 20	440		

### OVERFLOW VALVES

Size in Inches	Cost Installed
3 x 8	\$ 54
3 1/2 x 8	54
4 x 8	56
5 x 8	64
5 x 10	64
6 x 10	86
6 1/2 x 10	89
8 x 12	103
10 x 14	144
12 x 16	185
14 x 18	232
16 x 20	335
18 x 20	402
20 x 24	510

# IRRIGATION SYSTEMS

## IRRIGATION VALVES

The orchard valve is a solid arch set down in a riser. Although it is generally used in orchards, it may also be found in row crops and pastures.

### ORCHARD VALVE

Valve Size	Riser Size	Cost
3 1/2"	8"	\$ 53
4"	8"	58
5"	8"	65
6"	10"	85
6 1/2"	10"	87
8"	12"	100
10"	14"	140
12"	16"	180
14"	18"	210
16"	20"	315
18"	21"	395
20"	24"	480

# IRRIGATION SYSTEMS

## IRRIGATION VALVES

The vineyard valve is a modification of the orchard valve. The riser is pierced with two or more small galvanized tubes which have small sliding galvanized gates. This arrangement allows a choice of direction and volume of water flow. This valve is found mainly in the Central San Joaquin Valley.

### VINEYARD VALVE

Valve Size	Riser Size	Number of Gates	Gate Size	Cost Installed
3 1/2"	8"	2	2"	\$61
3 1/2"	8"	2	2 1/2"	63
3 1/2"	8"	2	3"	65
3 1/2"	8"	3	2"	65
3 1/2"	10"	2	2"	63
3 1/2"	10"	2	2 1/2"	66
3 1/2"	10"	2	3"	66
4"	8"	2	2"	63
4"	8"	2	2 1/2"	65
4"	8"	2	3"	67
4"	10"	2	2"	66
4"	10"	2	2 1/2"	68
4"	10"	2	3"	70
4"	10"	3	2"	70
4"	10"	4	2"	70
5"	10"	4	2"	81
5"	12"	2	3"	80
6"	10"	2	3"	74
6"	10"	4	3"	82
6"	12"	2	3"	88
6"	12"	2	4"	92

# IRRIGATION SYSTEMS

## IRRIGATION VALVES

Gate valves have different designs depending on the use. The canal gate is for general low-pressure uses as canal discharges, pressure pipelines, etc. The screw-pressure gate is a high-pressure gate valve used for reservoirs, etc. The hub-end gate is designed for use in pipelines.

### GATE VALVES

Size in Inches	Screw Pressure	Canal Gate	Hub-End Gate	Clamp Gate	Baxter Gate	Galvanized Gate	*Brass Slide Gate	*Cast Iron Gate
6						\$68		
8	\$435		\$720	\$320		96		\$105
10	490	\$ 530	870	370		105	\$315	130
12	550	580	1,020	410	\$860	120	340	145
14	715	680	1,270	540		150	350	210
16	1,145	800	1,570	675	1,050	175	420	315
18	1,530	930	1,950			190	550	
20	1,590	1,100	2,380			215	630	
24	2,050	1,240				290	760	

\* Brass-Slide and Cast-Iron Gates are seldom used.

Capped riser irrigation systems are generally found in old orange groves. The galvanized gates are diamond shaped.

### CAPPED RISERS

Size	Number of Gates	Size of Gates	Installed Cost
8"	2	2"	\$42
8"	3	2"	50
8"	4	1"	48

### BALL VENTS

Size	Installed on Line
2"	\$ 80.00
3"	150.00
4"	198.00



# IRRIGATION SYSTEMS

## PERMANENT IRRIGATION SYSTEM

The larger set-ups are at lower end of range

### SPRINKLERS— "SOLID SET"—UNDER TREES

Type	Cost Per Acre
Manual System	\$ 750 to 1,100
Automatic System	850 to 1,200
Frost Protection System	900 to 1,400
Automatic system with frost protection	1,200 to 1,500

P.V.C. underground lines, 12" risers, impulse heads, sand filter

### SPRINKLERS—"SOLID SET"—OVER VINES

Type	Cost Per Acre
Manual System	\$ 800 to \$1,100
Automatic System	\$ 900 to \$1,200
Frost Protection System	\$1,000 to \$1,200
Automatic system with frost protection	\$1,600 to \$2,400

P.V.C. underground lines, 6" risers, impulse heads, sand filter

### DRIP SYSTEM—ORCHARD

Type	Cost Per Acre
New planting (1 to 4 emitters per tree)	\$ 750 to \$1,000
Mature orchard (4 emitters per tree)	\$ 700 to \$1,100

### DRIP SYSTEM—VINEYARD

Type	Cost Per Acre	Total Cost
Ratio of cost—70 percent above ground, 30 percent below ground, add	\$950 to \$1,300	
Elaborate sand filters (for dirty water-aqueduct and river water), add	\$100 to \$120	
Fertilizer application equipment, add		\$500 to \$600
When proportion pumps are used, add		\$1,350 to \$2,200

The linear overhead sprinkler system is used on a level parcel usually a one-half section of land. A concrete ditch runs through the parcel as a water supply. This type of irrigation system costs between **\$650 to \$750** per acre. The linear drive machine costs **\$120,000 - \$140,000**.

# IRRIGATION SYSTEMS

## PERMANENT IRRIGATION SYSTEM

### PULL HOSE SYSTEM

Type	Cost Per Acre
Plus pump and filter	\$550 to \$700

### CENTER PIVOT SPRINKLER—Including concrete base

Size	Cost Each
160 acres (130 acres net)	\$34,000 to \$38,000

### CONCRETE PIPE POURED IN-PLACE<sup>1</sup>

Size in Inches	Cost Per Linear Foot
30	\$12.50
36	13.50
42	17.80
48	21.00

Air-Vents	10"—\$10.00 12"—\$12.00 14"—\$14.00 per foot
Concrete Structures	\$400 per cubic yard
Control Gates	\$200
Hook-up and Connections	Between no charge and \$240

### CRIBBINGS

Size in Inches	Cost Per Linear Foot
24	\$125
30	170
36	180

The concrete riser above the valve is cut in half to direct the flow of water

<sup>1</sup> This pipe is installed using a two-pour system. Monolithic pipe is installed by a single-pour system. Monolithic pipe is two to three times greater in cost.

## IRRIGATION SYSTEMS

### CONCRETE DITCH COSTS

Costs are for one-half to one mile runs. Shorter runs are a little higher.

<u>Bottom</u>	<u>Depth</u>	<u>Cost Per Foot</u>
1'	16"	\$6.00
1'	18"	6.25
1'	20"	6.60
1'	22"	7.00
1'	24"	7.25
1'	26"	7.50
1'	28"	7.80
1'	30"	8.20
2'	24"	10.70
2'	27"	11.00
2'	30"	12.20
2'	34"	13.20
2'	36"	13.70
2'	38"	14.20
2'	40"	14.70
2'	42"	15.20
2'	44"	16.20
2'	46"	16.70
2'	48"	18.20

The above costs do not include end gates and turn out gates. They range from **\$100 to \$125** each (three joints 12" x 14" in diameter). Check gates cost **\$325**.

The above prices do include the land shaping.

## IRRIGATION SYSTEMS



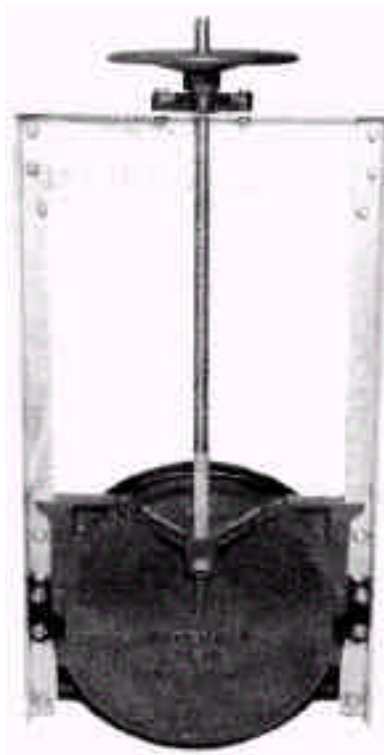
**ALFALFA VALVE**



**YAKIMA VALVE**



**PRESSURE SLIDE GATE**

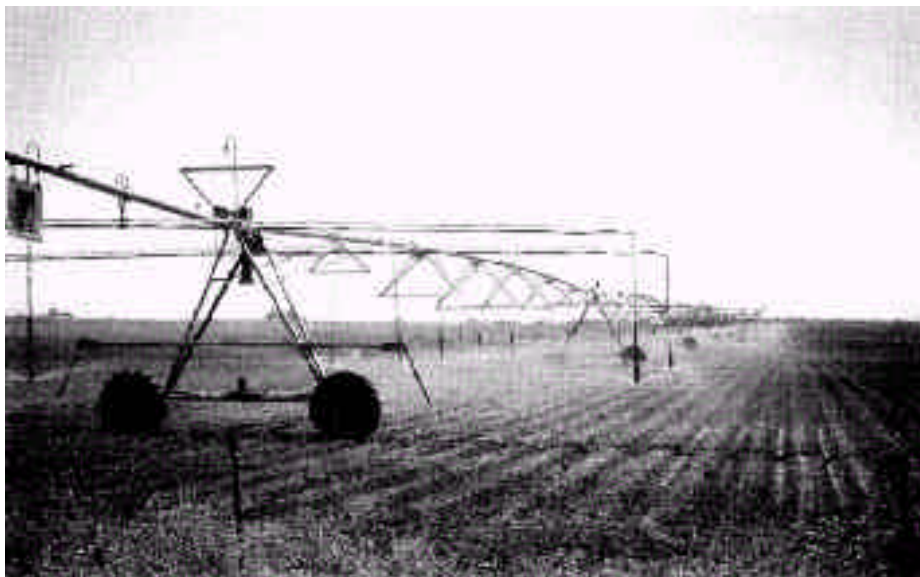
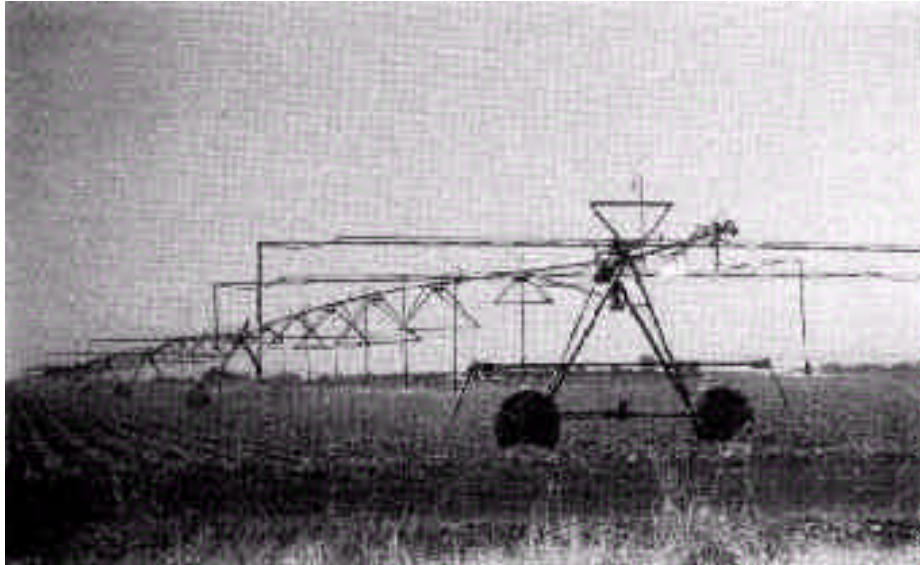


**CANAL GATE**



**HUB END GATE**

## **IRRIGATION SYSTEMS**



### **IN-LINE OVERHEAD SPRINKLER SYSTEM**

## **IRRIGATION SYSTEMS**



**PIVOTAL OVERHEAD SPRINKLER**

## **AH 534.62: PUMPS**

This section contains specifications and costs for various pumps used with irrigation systems, including:

- Turbine pumps
- Diesel powered pumps
- Wells
- Windmills

# PUMPS

## SAN JOAQUIN VALLEY BASE TURBINE 3-PHASE FREE FLOW DISCHARGE

1,800 RPM, 5 to 350 HP installed, including pump complete in place with normal stages, power pole, pads, and control panel. Well and casing excluded.

HP	Depth of Setting											
	40'	60'	80'	100'	120'	140'	160'	180'	200'	220'	260'	300'
5	5,265	5,330	6,065	6,440	7,425							
8	5,330	5,440	6,315	6,730	8,050	8,660	9,595	10,275	11,010	11,755		
10	5,570	6,315	7,050	7,670	8,415	8,780	9,770	10,525	11,260	11,995	13,490	
15	6,315	6,935	7,670	8,290	8,660	8,920	10,020	10,830	11,755	12,490	14,225	15,590
20	7,680	8,160	8,780	9,160	9,590	10,020	10,525	11,010	11,885	12,870	14,360	15,720
25	8,160	8,415	9,160	10,150	10,525	10,885	11,515	12,620	13,490	14,225	14,605	16,085
30	9,160	9,645	10,020	10,645	11,140	11,755	12,380	12,995	13,610	14,360	15,475	16,710
40	10,150	10,390	10,645	11,260	12,610	13,360	14,110	14,855	15,590	16,085	17,940	19,185
50	10,525	11,755	12,995	13,610	14,230	14,855	15,475	16,085	17,940	18,565	21,030	22,270
60		13,605	14,225	15,475	16,085	16,710	17,325	17,940	19,185	21,035	23,510	24,750
75		15,475	16,085	17,940	18,565	19,185	19,805	21,030	22,270	23,510	27,235	28,460
100		16,095	17,940	19,185	21,030	22,280	23,520	24,750	25,370	26,610	28,460	29,700
125		19,185	21,030	22,270	23,510	24,750	26,610	27,850	29,890	32,180	34,660	35,890
150			22,270	23,510	24,755	26,610	28,460	29,700	30,940	34,030	37,130	38,370
200			23,510	24,755	27,235	30,940	32,180	34,660	35,890	38,370	42,075	43,315
250				32,180	35,890	37,130	38,370	39,610	42,075	44,555	45,790	49,505
300					42,075	43,315	44,555	47,040	49,505	50,745	53,215	54,460
350						51,985	53,215	54,460	56,930	58,160	59,410	61,880

Note: The appraiser must know the horsepower and depth of setting in order to estimate the RCN from the chart.

Turbine pumps are more commonly used than submersibles, primarily due to accessibility of the pump for maintenance purposes. Submersibles tend to exceed the cost of turbines at high settings and tend to be less costly at lower settings.

Add 10 percent to the above RCN factors for irrigated sprinkler systems.



# PUMPS

## DIESEL POWERED DEEP WELL IRRIGATION PUMPS

The complete installation costs are divided into three parts: engines, gear heads, and below ground assembly. Costs are based on data from Fresno to the Southern San Joaquin Valley.

### DIESEL ENGINES NEW (Includes Tax and Delivery)

HP	Cost
75	\$7,300 - \$9,800
100	\$9,800 - \$13,000
150	\$12,000 - \$15,600
200	\$15,000 - \$18,600
250	\$18,700 - \$21,700
300	\$20,800 - \$26,000

Reconditioned engines deduct 25 to 30 percent

### GEAR HEADS

HP	DRIVE	SHAFT	FLANGES (2)	GUARD	LABOR	TOTAL
100	\$1,890	\$560	\$310	\$155	\$1,530	\$4,440
125	\$2,040	\$660	\$410	\$155	\$1,530	\$4,800
150	\$2,500	\$660	\$410	\$155	\$1,530	\$5,250
200	\$3,060	\$660	\$410	\$155	\$1,530	\$5,810
250	\$5,100	\$1,020	\$510	\$155	\$1,530	\$8,160
300	\$5,610	\$1,020	\$510	\$155	\$1,530	\$8,820
350	\$6,630	\$1,020	\$510	\$155	\$1,530	\$9,840
400	\$8,160	\$1,130	\$510	\$155	\$1,530	\$11,470

### BELOW GROUND ASSEMBLY (Includes Column—Tube and Shaft and Bowls)

Gear Head HP	200' Lift	300' Lift	400' Lift	500' Lift	600' Lift	700' Lift
100	\$15,300	\$18,360				
125	\$20,400	\$22,950	\$25,500			
150	\$21,620	\$25,500	\$26,720			
200		\$27,540	\$29,070	\$31,110		
250			\$31,010	\$33,050	\$35,090	
300				\$34,370	\$36,400	\$38,450
400				\$35,900	\$37,940	\$41,000

Add to engine and gear head figures.

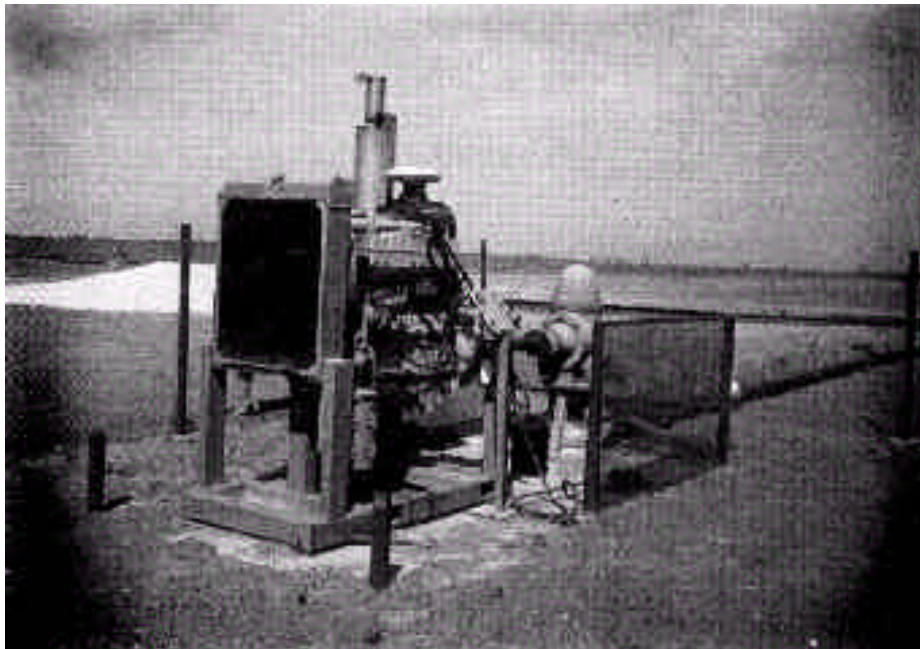
**RULE OF THUMB:** The horsepower of the gear head will require an engine with bulk or gross horsepower of about 1-1/2 times the size of the gear head, i.e., 200 HP gear head x 1.5 = 300 HP engine. 300 bulk HP engine x 80 percent = continuous HP x 80 percent = 192 HP to gear head.

**NOTE:** Costs do not include fuel tanks or fuel tank saddles.

## **PUMPS**



## **TURBINE PUMP**



## **DIESEL ENGINE WITH GEAR HEAD DRIVE**

## PUMPS

### DISCHARGE HEADS

<u>Discharge Size</u>	<u>Price Includes Head, Solenoid, Oiler, Column, Nipple, and Flange</u>
4 x 12	\$1,225
6 x 12	1,475
8 x 12	1,530
8 x 16 1/2	1,890
10 x 20	2,350

### COLUMN ASSEMBLY (In 20' lengths)

Column	Tube	Shaft	Price Per
4"	1 1/2"	1"	\$35.00
6"	2"	1 1/4"	51.00
8"	2 1/2"	1 1/2"	68.00
10"	2 1/2"	1 11/16"	83.00
10"	3"	1 15/16"	98.00
12"	3"	1 15/16"	118.00
12"	3 1/2"	2 1/4"	134.00

NOTE: Column assembly in 10' lengths—add 10 percent.

Reduce the above costs 15 percent for the San Joaquin Valley.

## PUMPS

### BOWLS

Stages	8"	10"	12"	14"	16"
<b>1</b>	\$1,270	\$1,500	\$1,965	\$2,890	\$4,100
<b>2</b>	1,330	1,850	2,425	3,525	4,620
<b>3</b>	1,620	2,195	3,120	4,275	7,160
<b>4</b>	1,965	2,655	3,640	4,965	7,275
<b>5</b>	2,425	3,000	4,390	6,065	9,010
<b>6</b>	2,540	3,525	4,850	7,045	10,165
<b>7</b>	2,775	3,930	5,430	8,030	11,550
<b>8</b>	3,000	4,390	6,065	9,010	12,705
<b>9</b>	3,410	4,850	6,815	9,700	14,205
<b>10</b>	3,640	5,085	7,275	10,685	15,535
<b>11</b>	3,985	5,545	7,910		
<b>12</b>	4,390	6,065	8,490		
<b>13</b>	4,620	6,525			
<b>14</b>	4,850	6,930			
<b>15</b>	5,315	7,275			

Reduce the above costs 10 percent for the San Joaquin Valley

5 HP	to	7 1/2 HP	Use 8" bowls
10 HP	to	20 HP	Use 10" bowls
25 HP	to	60 HP	Use 12" bowls
75 HP	to	350 HP	Use 14" bowls up to 150' setting
8" bowls—25' per stage (100' = 4 stages)			
10" bowls—35' per stage (100' = 3 stages)			
12" bowls—50' per stage (100' = 2 stages)			
14" bowls—60' per stage (100' = 2 stages)			

## PUMPS

### COLUMN PIPE

Size	10' Lengths	20' Lengths
6"	\$170	\$215
8"	230	385
10"	310	510

Reduce the above costs 10 percent for the San Joaquin Valley.

### TUBE AND SHAFT

1 1/2" x 1"	\$135	\$185
2" x 1 1/4"	195	330
2 1/2" x 1 1/2"	245	460
2 1/2" x 1 11/16"	280	535
3" x 1 15/16"	395	715

Reduce the above costs 10 percent for the San Joaquin Valley.

5 HP to 40 HP	Use 1 1/2" x 1"
50 HP to 75 HP	Use 2" x 1 1/4"
100 HP to 150 HP	Use 2 1/2" x 1 1/2"
5 HP to 15 HP	Use 6" column
20 HP to 40 HP	Use 8" column to 100' then use 6"

## PUMPS

### SUBMERSIBLE

Costs are based on 3-phase, 3,600 RPM pump in a 6" to 18" well. They include normal stages, check valve, power pole, control panel, and installation labor at 0' setting. Costs are relative to settings—low for shallow, high for deep—for installations typical to the horsepower. Add riser pipe and wire costs per linear foot to setting depth. Add well and casing.

HP	Motor, Pump, and Stages	Column Assembly	Recommended Well Size
5	2,300 to 2,575	\$5.50 to \$7.40	8"
7 ½	2,625 to 2,950	\$5.50 to \$11.20	8"
10	2,950 to 3,330	\$5.50 to \$12.20	8" to 10"
15	3,450 to 4,050	\$6.90 to \$13.50	10" to 12"
20	4,250 to 4,720	\$8.00 to \$14.30	12"
25	4,480 to 5,130	\$10.00 to \$14.40	12"
30	6,120 to 6,670	\$10.00 to \$15.65	12"

High capacity—1,760 RPM (little used) for deep wells. Cost includes pump end and one stage, control panel, power pole, tax, and installation labor.

HP	Motor and Pump	Stages	Riser Pipe and Wire Per Foot	Recommended Well Size
40	\$9,580 +	\$340 per stage	\$18.55	12"
50	10,505 +	410 per stage	23.20	14"
60	11,225 +	450 per stage	23.20	14"
75	11,900 +	460 per stage	23.20	14"
100	12,825 +	480 per stage	23.20	14"

### TAIL WATER PUMPS

HP	Cost	HP	Cost
2	\$3,215	20	\$6,250
3	3,400	25	6,680
5	3,700	30	7,000
7 ½	4,000	40	7,800
10	4,350	50	8,600
15	5,570		

# PUMPS

## WELL COSTS

### REVERSE ROTARY DRILLING (Includes Casing, Gravel Pack, Cement Seal)

Size	To 700'	Over 700'	Over 1,000'
6" 12 ga.	\$21.00	\$35.00	
6" 10 ga.	25.00		
8" 12 ga.	24.00		
8" 10 ga.	28.00		
8" 3/16 in.	32.00	38.00	
10" 10 ga.	36.00		
10" 3/16 in.	39.00		
10" 1/4 in.	43.00	53.00	
12" 10 ga.	40.50		
12" 3/16 in.	44.00		
12" 1/4 in.	48.00	59.30	\$81.60
14" 3/16 in.	54.00		
14" 1/4 in.	59.00	72.00	
14" 5/16 in.	64.00	77.50	92.80
16" 3/16 in.	58.80		
16" 1/4 in.	64.00		
16" 5/16 in.	69.00	84.80	102.00
18" 3/16 in.	61.00		
18" 1/4 in.	69.70		
18" 5/16 in.	76.90	96.80	122.40
20" 3/16 in.	64.50		
20" 1/4 in.	77.00		
20" 5/16 in.	85.30	104.00	132.60

Cable Tool Drilling	Cost Per Foot of Depth
6"	\$18.00 - \$23.00
8"	\$22.00 - \$25.00
10"	\$25.00 - \$30.00
12"	\$37.00 - \$45.00
14"	\$40.00 - \$50.00
16"	\$45.00 - \$55.00
18"	\$55.00 - \$75.00

State Law requires 20' seal in all well shafts.

6"	\$300.00
8"	340.00
10"	400.00
12"	500.00
14"	600.00
16"	600.00
18"	600.00

## PUMPS

## WINDMILLS

### COST INSTALLED

Wheel or Fan Diameter	Weight (Pounds)	Cost	Installation	Total
6' mill	200	\$2,300	\$1,150	\$3,450
8' mill	370	2,600	1,150	3,750
10' mill	660	3,660	1,350	5,010
12' mill	1,100	5,200	1,600	6,450
14' mill	1,700	7,500	1,800	9,300
16' mill	2,500	9,900	2,200	12,100

### TOWER REQUIREMENTS FOR FAN SIZE IN DIAMETER

Tower Height	Windmill Size				
	6' - 8' Fan	10' Fan	12' Fan	14' Fan	16' Fan
21'	\$1,465	\$1,555			
27'	1,686	2,110	\$2,415	\$2,625	
33'	1,938	2,230	2,654	3,057	\$4,105
40'	2,400	2,633	3,116	3,359	4,708
47'	2,692	3,135	3,660	4,712	5,614

Windmill installation costs are determined by the following:

- Tower height
- Fan diameter
- Force pump: size and diameter
- Cylinder: size and type
- Pipe: size and length
- Rod: material, size and length.

Force pump, cylinder pipe, rod, and miscellaneous costs range from **\$750 to \$2,100**.

<u>Example</u>	
10' Fan	\$5,010
33' Tower	2,230
Force Pump, Cylinder Pipe, Rod and Miscellaneous Costs	<u>1,300</u>
	\$8,540

Refurbished Windmill: Deduct 35 to 40 percent from above prices.



## PUMPS

## WINDMILLS

## WATER STORAGE TANKS

### GALVANIZED COVERED STORAGE TANKS

Gallons	Diameter	Height	Gauge	Weight (Pounds)	Price
1,044	6' 8"	48"	12	670	\$ 980
1,504	8' 10"	48"	12	912	1,175
1,900	6' 4"	96"	12	1,014	1,240
2,500	7' 4"	96"	12	1,321	1,555
2,880	7' 10"	96"	12	1,329	1,650
3,200	8' 3"	96"	12	1,423	1,785
3,500	8' 8"	96"	12	1,520	1,900
4,200	9' 5 1/2"	96"	12	1,724	2,350
5,000	10' 4"	96"	12	1,924	2,530
5,500	10' 10"	96"	12	2,080	2,790
6,000	11' 4"	96"	12	2,163	2,900
6,500	11' 10"	96"	12	2,210	3,110
7,500	10' 4"	12'	12	2,553	3,370
8,600	9' 7"	16'	12	2,856	3,735
10,000	9' 9"	18'	12	3,169	4,300
10,000	11' 11"	12'	12	3,073	4,300
12,000	10' 2"	20'	12	3,667	4,890
15,000	11' 11"	18'	10	5,376	6,440
17,500	11' 2"	24'	10	5,995	7,400
20,000	11' 11"	24'	10	6,480	8,480
25,000	18' 10"	12'	10	7,320	9,740
30,000	20' 9"	12'	10	8,500	11,130

## **AH 534.71: CORRALS AND FENCES**

This section contains various costs associated with corrals and fences. Specifications and costs are included for:

- Steel fencing
- Barbed wire fencing
- Wood fencing
- Wood gates
- Metal gates
- Metal panels
- Vinyl/P.V.C. fencing
- Cattle squeeze

## CORRALS AND FENCES

### STEEL FENCING

Height and Type	Fence Cost Per Lineal Foot	Additions
<u>11 Gauge</u>		
3' chain link	\$4.95	Top Rail: \$1.25 per lineal foot
4' chain link	5.50	
5' chain link	6.50	Barbed wire, 3 strands:
6' chain link	7.90	\$1.65 per lineal foot
8' chain link	10.00	
10' chain link	12.60	Barbed coils, \$5.75 per
12' chain link	15.00	lineal foot
<u>9 Gauge</u>		
3' chain link	\$5.50	Barbed wire, 3 strands:
4' chain link	5.80	\$1.80 per lineal foot on
5' chain link	6.90	10' and 12' fence:
6' chain link	8.25	
8' chain link	10.90	
10' chain link	13.90	
12' chain link	16.50	

### BARBED WIRE FENCING

Size and Type	Per Lineal Foot/1 Mile or More
Barbed wire, 3 strand	\$1.80 to \$2.20
Barbed wire, 4 strand	\$2.00 to \$2.40
Barbed wire, 5 strand	\$2.20 to \$2.60
2 strands barbed, 32" woven wire, steel posts	\$3.20 to \$3.40

Fence costs are complete—fencing and posts. Gates are to be added. Do not deduct fence for gates. Posts are set in concrete on 10' centers.

## CORRALS AND FENCES

### WOOD FENCING—COST PER LINEAL FOOT

Rail Size	Post Size	Number of Rails			
		1	2	3	6
2" x 8"	6" x 6"	\$6.40	\$7.40	\$9.50	\$12.00
2" x 6"	6" x 4"	4.93	5.37	5.81	7.12
2" x 4"	6" x 4"	4.78	5.06	5.34	6.40
1" x 8"	6" x 4"	4.60	5.20	5.50	6.40
1" x 6"	6" x 4"	4.30	4.70	5.30	6.10
1 ¼" x 6"	6" x 4"	4.50	4.50	5.55	6.60
2" x 6"	4" x 4"	4.43	4.87	5.30	6.40

All posts figured at 8' on center.

### WOOD GATES—COST PER GATE

Height/ Description	Width						
	4'	6'	8'	10'	12'	16'	20'
4' 5 Rails	\$50	\$64	\$81	\$156	\$162	\$178	\$190
5' 6 Rails	63	75	121	169	182	196	209
6' 7 Rails	75	87	174	185	202	213	230

### METAL GATES (INCLUDING POSTS)—COST PER GATE

Height/ Description	Width					
	3'	4'	10'	12'	14'	16'
4' 1 3/8" Galvanized Tube Galvanized Fabric Including Hardware	\$68	\$74	\$126	\$137	\$158	\$173
5' 1 5/8" Standard Pipe Fabric Including Hardware	120	137	210	242	263	294
6' 1 5/8" Standard Pipe Fabric Including Hardware	130	147	242	273	305	336

# CORRALS AND FENCES

## METAL GATES

### 5-BAR ADJUSTABLE GATES—5' IN HEIGHT

Size	Cost Per Gate
3' to 4'	\$ 78.00
4' to 6'	88.00
6' to 8'	112.00
8' to 10'	126.00
10' to 12'	137.00
12' to 14'	163.00
14' to 16'	194.00
16' to 20'	245.00

### 6-BAR ADJUSTABLE GATES—5' IN HEIGHT

Size	Cost Per Gate
3' to 4'	\$ 86.00
4' to 6'	100.00
6' to 8'	127.00
8' to 10'	143.00
10' to 12'	154.00
12' to 14'	184.00
14' to 16'	195.00
16' to 20'	240.00

### 5-BAR ADJUSTABLE PANEL USED FOR STALLS OR PENS

Size	Cost Per Gate
8' to 10'	\$111.00
10' to 12'	127.00
12' to 14'	136.00
14' to 16'	158.00
16' to 18'	177.00
18' to 20'	191.00
20' to 22'	204.00
22' to 24'	218.00
24' to 26'	224.00

Add for the hinge and latch posts - **\$35 to \$40**

# CORRALS AND FENCES

## METAL PANELS

### 6-BAR ADJUSTABLE PANEL USED FOR STALLS OR PENS

Size	Cost Per Gate
8' to 10'	\$126.00
10' to 12'	140.00
12' to 14'	154.00
14' to 16'	178.00
16' to 18'	192.00
18' to 20'	218.00
20' to 22'	229.00
22' to 24'	246.00
24' to 26'	255.00

### 3-BAR FENCE PANEL

Size	Cost Per Gate
10'	\$ 70.00
12'	82.00
16'	95.00
18'	101.00
20'	113.00
24'	126.00

### PORTABLE LOADING CHUTE

Size	Cost Per Gate
30" x 5' High	\$1,000

### 5-BAR SOLID PANEL

Size	Cost Per Gate
10'	\$100.00
12'	111.00
16'	147.00
18'	157.00
20'	170.00
24'	191.00

### 6-BAR SOLID PANEL

Size	Cost Per Gate
10'	\$ 112.00
12'	126.00
16'	167.00
18'	174.00
20'	193.00
24'	221.00

## CORRALS AND FENCES

### VINYL/P.V.C. FENCING (White)

Post Size	Rail Size	Number of Rails	Cost Per Lineal Foot Installed
5" x 5"	1-1/2" x 5-1/2" x 16'	3	\$8.50
5" x 5"	1-1/2" x 5-1/2" x 16'	4	\$9.25

Prices based on 1,000' +

**Height:** 54 inches or 6 1/2 feet

**Posts:** Set in concrete—10" diameter, 30" deep, 8' on center

**Gates:** 12' Metal gates (preferred)—\$650 installed, plus paint

12' P.V.C. gates (have tendency to sag)—\$1,000 installed

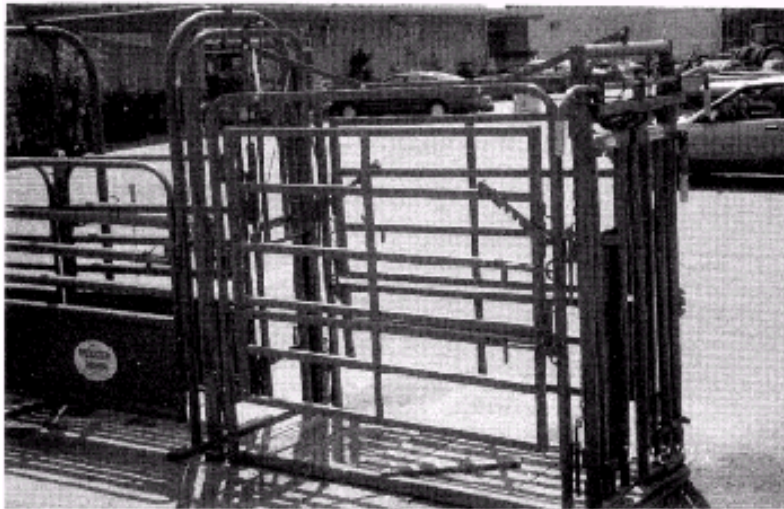
**Color:** Add 10 percent



## CORRALS AND FENCES

### CATTLE SQUEEZE

Hydraulic Metal	\$5,000
Upright Metal	\$1,800 to \$2,000
Upright Metal Extended	\$1,950 to \$2,100
Calf Chute or Table	\$850





## **AH 534.75: GREENHOUSES**

This section contains specifications and costs for greenhouses. Commercial greenhouses are constructed with steel or wood posts and trusses on 10' ± centers. Some of the greenhouses have a polycarbonate, fiberglass cover, glass cover, or a polyethylene plastic cover. The span of the truss is generally 20 to 40 feet.

- Some greenhouses are constructed as Quonset design metal ribs and fiberglass cover.
- Wall heights vary from 7 feet to 10 feet on the straight wall construction.

# GREENHOUSES

## BUILDING SPECIFICATIONS

Components	Low Quality	Average Quality	High Quality
Wall and Roof	Light pipe, 4' wall, single light polyethylene cover, fiberglass ends	Galvanized steel frame, 8' wall, double polycarbonate or fiberglass cover	Heavy steel frame, 8' wall, glass or multi-wall polycarbonate cover
Floor	Dirt—some gravel	Gravel—some concrete walks	Adequate concrete walks, concrete foundation
Interior	No lighting, minimum water	Average lighting, water, and roof vents	Ample lighting, water, roof vents, and exhaust fans

## SQUARE-FOOT COSTS

Quality	Square-Foot Area					
	3,000-5,000	10,000	20,000	30,000	40,000	50,000
Low	\$ 3.00	\$ 2.70	\$ 2.60	\$ 2.45	\$ 2.20	\$ 2.00
Average	12.00	11.25	9.60	9.00	8.60	8.40
High	16.00	15.00	13.00	12.35	11.50	11.25

## ADDITIVES

Additional concrete walk	\$2.40 to \$2.60 per square foot
Benching	\$2.20 to \$2.50 per square foot—average quality
Gravel floor	\$.25 per square foot

# GREENHOUSES

## CLIMATE CONTROL



# **GREENHOUSES**

## **GREENHOUSE FRAMING**



## GREENHOUSES

### SHADE CLOTH HOUSES

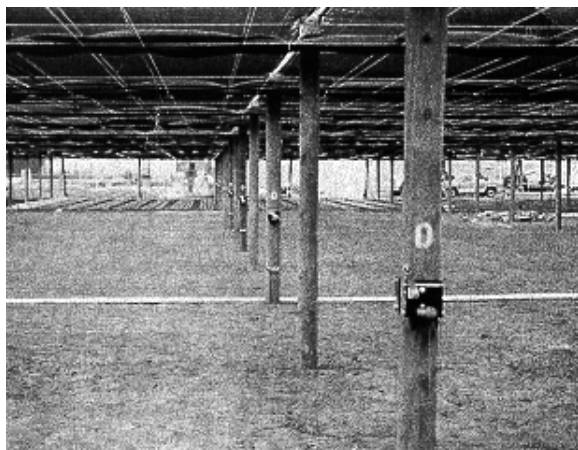
#### FAIR TO LOW COST

Wood or steel post construction, no walls. Overhead cable support with wire, covered by a flat shade fabric normally 7' to 9' high. The following costs are with a dirt floor.

Square Foot Area	Cost Per Square Foot
Under 10,000	\$1.00
10,000 – 20,000	\$.75 - \$.80
20,000 – 40,000	\$.70 - \$.75
40,000 Up	\$.65

#### ADDITIVE

Gravel Floor            \$.25 per square foot



## **AH 534.76: LAND DEVELOPMENT AND DRAINAGE TILE**

### **LEVELING COST**

<b>Item</b>	<b>Per Acre</b>
Native Land	\$300 - \$500
Relieving	\$125 - \$200
Touch-Up Leveling	\$60 - \$80
Rescaping	\$60 - \$80

### **EARTH MOVING**

<b>Size</b>	<b>Cost</b>
Per cubic yard	\$.55 - \$.65

### **RIPPING**

<b>Item</b>	<b>Cost</b>
Clay 5' deep	\$325 - \$375
Clay 6' deep	\$350 - \$400
Loamy or sandy soil	\$225 - \$275
Hard pan 4' - 6' deep	\$350 - \$650

#### **NOTE:**

1. Ripping costs are based on four-foot centers.
2. Ripping cost with a slip plow attached to shank (superior mixing and breaking of soils) is typically done on six-foot centers, and the cost is equal to standard ripping on four-foot centers.
3. Typically takes ten hours to rip seven acres on four-foot centers.

## LAND DEVELOPMENT AND DRAINAGE TILE

Recent drainage tile installations use corrugated plastic tubing. The spacing varies from 100 feet to 400 feet on centers. The older type installation includes perforated tile with wide trenches. A 5-inch corrugated plastic drain tubing is installed in a 12-inch trench versus a 24-inch to 27-inch trench for the older type installation. The cost for gravel fill is much less because of the narrower trench.

The cost installed of 5-inch corrugated plastic tubing on 400-foot centers, 7 1/2-feet deep including sump and pump, and trench width of 12 inches with gravel fill over the pipe is as follows.

### DRAINAGE TILE

Loamy Soils	\$465 per acre
Rocky Soils	\$630 per acre

Reduce the above cost 25 percent if system lacks a pump or sump.

Increase the above cost 25 percent if the system has 100-foot centers, with 4-inch lines.

### TILE COSTS - INSTALLED

Includes trenching and perforated pipe packed in 3" pee gravel	
<u>Pipe Size</u>	<u>Cost</u>
4"	\$2.25
5"	2.50
6"	2.75
8"	3.55
10"	5.25
12"	6.50
15"	9.00

The above costs are for a standard system on level accessible soil. Costs are higher for undulating and remote farmland.

## AH 534.77: VINEYARD STAKES AND TRELLISES

Vineyard stakes and trellises costs vary due to the following:

- Type and quality of material
- Spacing between the rows of vines
- Spacing between the vines within the rows
- Kind of vineyard
- Cost of labor (farm labor or commercial contractor)

Addition of the components completes the cost. An example follows:

### Raisin Grape Trellis on 7' x 12' spacing

<u>Cost Per Acre</u>	<u>Metal Components</u>
8' end posts: say 11/acre @ \$13.20/post	\$145.20
7' T stakes: 7' x 12' spacing	1,010.00
2' cross arms: 7' x 12' spacing	336.00
Wire: 13 gauge, 3 wires	<u>215.00</u>
Total	Say \$1,706.00

Cost to remove stakes, wire, end posts, and vines:

<u>Operation</u>	<u>Cost Per Acre</u>
Cut wire	\$3 to \$6
Push and stack	\$80 to \$90
Burn	\$35 to \$45
Wire Removal	<u>\$15 to \$20</u>
Total	\$133 to \$161



## VINEYARD STAKES AND TRELLISES

**END POSTS:**    8'—11 per acre at \$13.20 to \$15.00 each = \$145.20 to \$165.00 per acre  
                      9'—11 per acre at \$14.00 to \$15.75 each = \$154.00 to \$173.25 per acre

		<u>Vineyard Spacing</u>	<u>Vines Per Acre</u>	<u>Stake Every Vine</u>	<u>Stake Every Other Vine</u>	<u>Stake Every Third Vine</u>
Metal T Stakes 6' @ .95 lbs/ft @ \$1.25 each		6' x 12'	605	\$756	\$378	\$191
		7' x 12'	518	647	323	215
		8' x 12'	454	567	283	141
Metal T Stakes 6' @ 1.25 lb/ft @ \$1.70 each		6' x 12'	605	1,028	514	342
		7' x 12'	518	880	440	293
		8' x 12'	454	771	385	256
Metal T Stakes 7' @ .95 lbs/ft @ \$1.40 each		6' x 12'	605	847	423	279
		7' x 12'	518	725	362	241
		8' x 12'	454	635	318	211
Metal T Stakes 7' @ 1.25 lbs/ft @ \$1.95 each		6' x 12'	605	1,179	589	392
		7' x 12'	518	1,010	505	336
		8' x 12'	454	885	442	295
Rebar Training Stakes 5'		6' x 12'	605	N/A	120	160
@ \$.40 each		7' x 12'	518	N/A	104	138
Between T Post		8' x 12'	454	N/A	91	120

### CROSS ARMS WITH U-BOLTS

Metal	12"	6' x 12'	605	\$302	\$151	\$100
		7' x 12'	518	259	130	86
		8' x 12'	454	227	114	75
Metal	24"	6' x 12'	605	393	197	130
		7' x 12'	518	338	169	112
		8' x 12'	454	295	148	98
Metal	34"	6' x 12'	605	514	257	171
		7' x 12'	518	440	220	147
		8' x 12'	454	385	193	128

Many T-post trellises systems are built with a mixture of .95 lb/ft stakes along with 1.25 lb/ft stakes. This mixture of light and heavy stakes keeps the cost down while the strength of the system is maintained.

## VINEYARD STAKES AND TRELLISES

### COMPONENT COSTS TO CALCULATE COSTS PER ACRE

#### WIRE PRICE PER ACRE

Based on 12' spacing between rows of vines and 13 gauge wire	
1 wire	\$ 85
2 wire	156
3 wire	215
4 wire	270

#### METAL STAKES AND CROSS ARMS

T-Post Stakes		Metal Cross Arms With U Bolts (Medium Grade)	
7'	.95 lbs/ft \$1.40	6"	\$.35
7'	1.25 lbs/ft 1.95	12"	.50
6'	.95 lbs/ft 1.25	18"	.56
6'	1.25 lbs/ft 1.70	24"	.65
5'	Rebar Training Stake .40	34"	.85
4'	¼" Steel Training Stake .25		

Heavy duty elaborate galvanized cross arms can run 40 to 50 percent more.

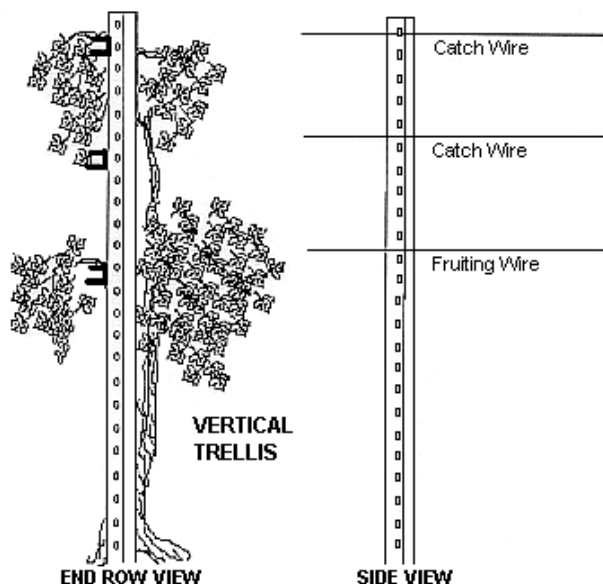
#### WOOD STAKES AND CROSS ARMS

Stakes		Cross Arms With Clips		Cross Arms With U-Bolts	
5'	\$1.21	12"	\$ .40	12"	\$ .48
6'	1.48	24"	.50	24"	.70
7'	1.79	30"	.57	30"	.75
		36"	.66	36"	.82

## VINEYARD STAKES AND TRELLISES

The following are some of the more common trellising systems used in California. Trellising costs vary due to the following:

- Spacing between the rows
- Spacing between the vines within the row
- Quality of materials
- Quantity of materials
- Cost of labor (farm labor or commercial contractor)



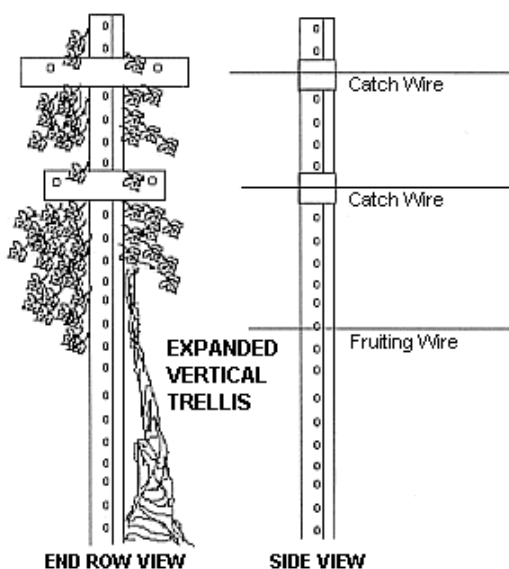
### VERTICAL TRELLIS

Commonly used in narrow rows of 10' or less.

**Materials:** 8' wood end posts; 7' light T stakes at each vine; three 13-gauge wires

#### Trellising Cost Per Acre:

\$1,300 to \$1,600 on 7' x 10' spacing



### EXPANDED VERTICAL TRELLIS

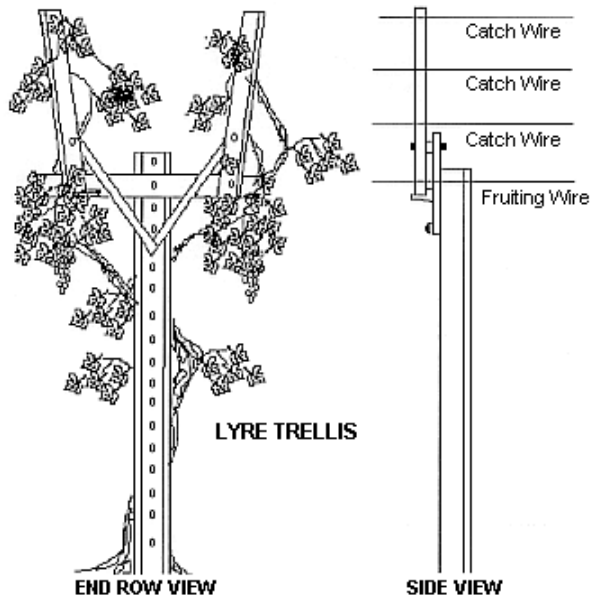
Commonly used in narrow to moderate row spacing.

**Materials:** 8' wood end posts; 7' medium T stakes; movable wire cross arms and five 12 or 13 gauge wires

#### Trellising Cost Per Acre:

\$1,700 to \$2,200 on 7' x 10' spacing

## VINEYARD STAKES AND TRELLISES



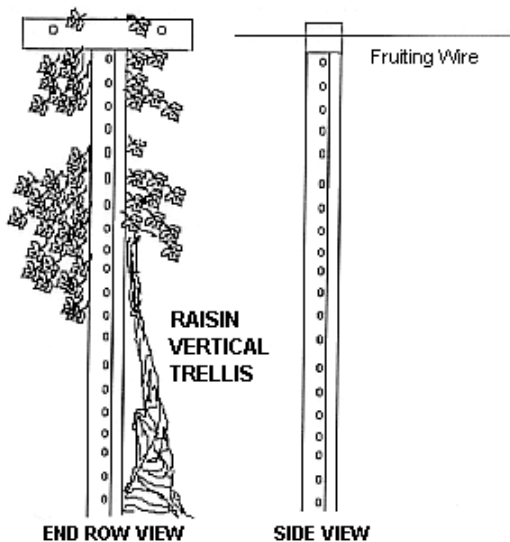
### LYRE TRELLIS

Commonly used in wide row of 11' to 12'.

**Materials:** Heavy steel or wood end posts; heavy and medium T stakes with anchor plates; 8' to 12' gauge wires on metal open Lyre cross arms with a typical width of 42" at the top.

#### Trellising Cost Per Acre:

\$3,800 to \$4,400 on 7' x 12' spacing



### RAISIN VERTICAL TRELLIS

Commonly used on raisins with 12' spacing.

**Materials:** 8' wooden end posts with 7' medium T stakes at each vine. A single 24" metal cross arm with two 13-gauge wires.

#### Trellising Cost Per Acre:

\$1,500 to \$1,900 on 7' x 12' spacing

### DRY ON THE VINE RAISIN TRELLIS

Commonly used in 12' row with 6' between vines.

**Materials:** Wood post 12' on ends, 9' on sides, 10' wood post every third vine with 36" cross arm, 8 wires per row, and cable support.

#### Trellising Cost Per Acre:

\$3,200 to \$3,800 on 6' x 12' spacing

# VINEYARD STAKES AND TRELLISES

## USEFUL INFORMATION

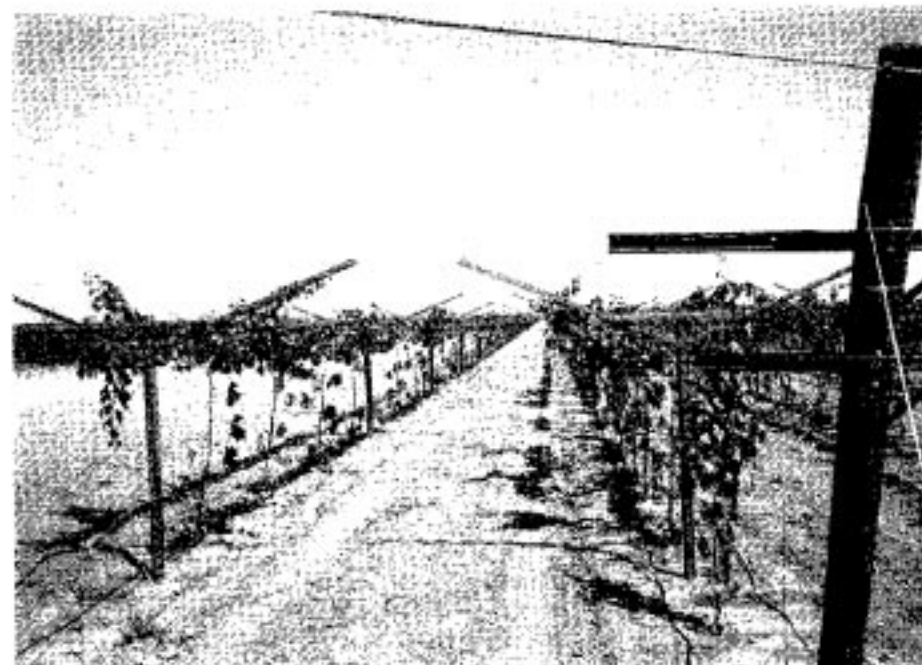
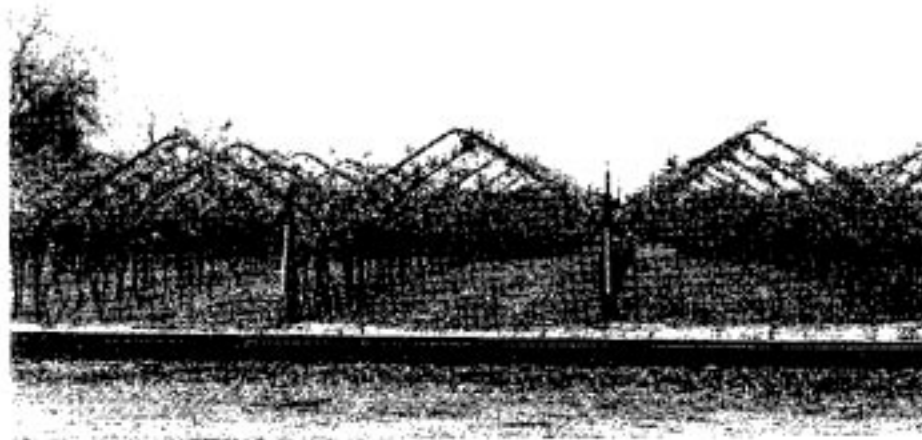
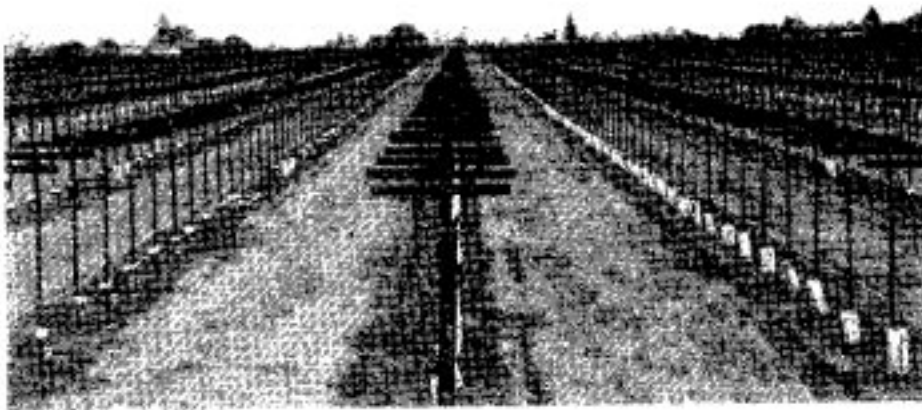
### WIRE

10 Gauge	2,060 ft. Per 100 lbs. roll
11 Gauge	2,580 ft. Per 100 lbs. roll
12 Gauge	3,370 ft. Per 100 lbs. roll
13 Gauge	4,470 ft. Per 100 lbs. roll
14 Gauge	5,860 ft. Per 100 lbs. roll

### PLANTING SPACING AND WIRE CHART

Planting Pattern Between Plants—Between Rows	One-Wire System No. of Wire Feet Required Per Acre	No. of Plants Required Per Acre
3' x 6'	7,260'	2,420
4' x 6'	7,260'	1,815
5' x 6'	7,260'	1,452
6' x 6'	7,260'	1,210
3' x 7'	6,222'	2,074
4' x 7'	6,222'	1,555
5' x 7'	6,222'	1,245
6' x 7'	6,222'	1,037
7' x 7'	6,222'	889
3' x 8'	5,445'	1,815
4' x 8'	5,445'	1,361
5' x 8'	5,445'	1,089
6' x 8'	5,445'	907
7' x 8'	5,445'	778
8' x 8'	5,445'	681
3' x 9'	4,850'	1,613
4' x 9'	4,850'	1,210
5' x 9'	4,850'	968
6' x 9'	4,850'	807
7' x 9'	4,850'	691
8' x 9'	4,850'	605
5' x 10'	4,355'	871
6' x 10'	4,356'	726
7' x 10'	4,354'	622
8' x 10'	4,352'	544
5' x 11'	3,960'	792
6' x 11'	3,960'	660
7' x 11'	3,962'	566
8' x 11'	3,960'	495
5' x 12'	3,630'	726
5½' x 12'	3,630'	660
6' x 12'	3,630'	605
7' x 12'	3,626'	518
8' x 12'	3,632'	454

## VINEYARD STAKES AND TRELLISES



## **AH 534.78: STEEL BUILDINGS**

The *all steel* building serves a variety of functions for the farmer/rancher with its most common use being either storage space for farm machinery or storage of feeds and grains. The typical building as described in this section reflects the cost of a basic building.

In addition, there are instances where the building cost is modified for wall height, partitions, and extra electrical circuits within the structure.

### **BASIC BUILDING COST**

Square-foot costs of basic buildings include the following components:

1. Foundation as required for normal soil conditions.
2. Concrete slab floor, 4 inches to 6 inches thick with wire mesh.
3. A steel building made up of these components:
  - Steel frame or bents, 20, 25, or 30 feet on center.
  - Steel roof purlin, 4 1/2 to 5 1/2 feet on center.
  - Steel wall girts 6 to 7 feet on center.
  - Twenty-six gauge galvanized steel on walls and roof.
  - Window area equal to 2 percent of floor area.
  - Minimal light fixtures—including wiring.
  - One rotary vent per bay.
  - Two walk-in doors.
  - Two overhead or sliding doors.
  - Fourteen-foot eave height.

Basic steel buildings are of two types: the low profile roof pitch (1" in 12") and the more conventional barn-like roof pitch (4" in 12"). The cost differential between the two is considered immaterial for appraisal purposes.

### **ADDITIVE COSTS**

Additive costs are the in-place cost components not included in the basic square-foot cost but are those costs found as part of steel buildings. They are added to the basic building cost to arrive at a total building cost.

## STEEL BUILDINGS

### COST PER SQUARE FOOT

Length	Width											
	20	25	30	35	40	45	50	55	60	65	70	80
20	17.70											
25	17.50	17.15										
30	17.15	16.60	15.95									
35	16.60	15.95	15.10	14.60								
40	16.10	15.10	14.95	14.20	13.80							
50	14.95	14.40	14.05	13.75	13.15	12.55	12.30					
60	14.40	14.35	13.75	13.15	12.60	12.30	12.05	11.70				
75	14.05	13.75	13.20	12.60	12.40	12.10	11.70	11.35				
80	13.75	13.20	12.60	12.30	12.10	11.70	11.35	11.10	10.80	10.50	10.25	10.10
90	13.20	12.60	12.30	12.10	11.70	11.35	11.10	10.80	10.50	10.25	10.10	9.65
100	12.60	12.35	12.10	11.70	11.35	11.10	10.80	10.50	10.20	10.10	9.65	9.40
135		12.10	11.70	11.35	11.10	10.80	10.50	10.25	10.10	9.65	9.50	9.30
150			11.35	11.10	10.80	10.50	10.25	10.10	9.65	9.40	9.30	9.10
175				10.80	10.50	10.25	10.10	9.65	9.40	9.30	9.10	9.00
200					10.25	10.10	9.65	9.40	9.30	9.10	9.00	8.85
225						9.65	9.50	9.30	9.10	9.00	8.85	8.80
250							9.30	9.10	9.00	8.85	8.80	8.80

### ALTERNATE COSTS

Dirt Floor: Due to increased size of footings/foundation, no adjustment for dirt floor.

Wall Height: Add or subtract 2 percent per square foot from basic cost for each foot of variation above or below the basic 14-foot eave height.

Missing Wall Cover: Deduct **\$1.80** for each square foot of missing wall area.

Electrical Power: Deduct **\$1.50 - \$2.00** per square foot for lack of power.

The above costs are for 26 gauge steel cover.



# STEEL BUILDINGS

## ADDITIVE COSTS

The cost of additives, such as doors and windows, that replace a portion of the exterior skin of the building, reflects the net added cost of the component in-place. The cost of the skin that is replaced has been deducted from the total cost of the additive components. No further deduction is necessary.

### OVERHEAD DOORS WITH CHAIN HOIST OPENERS

Width	Height				
	8	10	12	14	16
8	\$570	\$600	\$700	\$900	
10	620	660	750	860	\$965
12	660	780	880	1,040	1,120
14	900	970	1,030	1,100	1,200
16	1,000	1,080	1,150	1,240	1,620
18	1,230	1,340	1,450	1,550	

### WALK-IN DOORS

Flush 3' x 7'	\$440
Half Glass	\$500

### ROTARY VENTS

20"	\$200
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### RIDGE VENTS

9" x 10'	\$375
12" x 10'	\$425

### GUTTERS AND DOWNSPOUTS

Per lineal foot	\$5
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### SKYLIGHTS

3' x 10'	\$60 - \$90
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### WINDOWS

3' x 3'	\$130
3' x 6'	160
4' x 6'	210
4' x 8'	260

## STEEL BUILDINGS

### ADDITIVE COSTS

#### HEATING

Overhead Suspended Unit	Cost Per Unit
75,000 BTU	\$900
100,000 BTU	1,100
200,000 BTU	1,500
300,000 BTU	2,000

#### RESTROOMS

Cost includes 2 fixtures, electrical service, and all partitions. Add for septic tank.	Total Cost
	\$3,500 - \$4,500

#### OFFICE AREAS

Cost includes partitioning, interior finish, trim, and doors	Square Foot
	\$25 - \$35

#### PARTITIONS

	Per Surface Foot
Gypsum on wood frame	\$3.50
Plaster on wood frame	\$5.00
Paneling (average quality)	\$4.00 - \$5.00

#### INSULATION

	Square Foot
R-11	\$.55 - \$.60
R-6	\$.45 - \$.50

## STEEL BUILDINGS



## AH 534.79: MISCELLANEOUS COSTS

### LIVESTOCK SCALES

Tons Capacity	Platform Size	Deck	Cost
10	8' x 15'	Conc. 4"	\$14,000
10	10' x 15'	Conc. 4"	15,000
15	10' x 18'	Conc. 6"	17,000
15	10' x 22'	Conc. 6"	19,500
30	10' x 30'	Conc. 6"	23,500
30	10' x 35'	Conc. 6"	25,000
50	12' x 35'	Conc. 6"	28,500

### STOCK RACK INCLUDED

Construction material—angle iron, steel tubing, steel cable, and steel kick plate.

### MOTOR TRUCK SCALES WITH CONCRETE DECK

Scales			Scale Pit		
Tons Capacity	Platform Size	Total Cost	Size	Standard Cost	Add for: 12' Width
20	25' x 10'	\$ 9,250	25' x 10'	\$ 9,800	900
30	25' x 10'	10,200	40' x 10'	13,100	1,000
50	40' x 10'	15,700	50' x 10'	14,500	1,100
50	50' x 10'	16,650	60' x 10'	15,400	1,300
60	60' x 10'	18,100	70' x 10'	16,000	1,500
60	70' x 10'	21,250	80' x 10'	17,100	2,100
60	80' x 10'	23,950	90' x 10'	18,750	
80	80' x 10'	29,200	90' x 10'	18,750	
100	90' x 10'	32,250	100' x 10'	20,500	

### ADD FOR WEIGHT RECORDING EQUIPMENT

Electronic indicator	\$1,000
Ticket printer	\$1,000

### EXAMPLE OF MOTOR TRUCK SCALE COST

Scales: 80 ton capacity, 80' x 10' platform	\$29,200
Scale Pit: 90' x 10' size, standard	18,750
Electric weight recording equipment and printer	<u>2,000</u>
Total	\$49,950

## MISCELLANEOUS COSTS

### BULK-FEED TANKS

Size and Type	Cost
7 Tons	\$2,000
8 Tons	2,100
10 Tons	2,300
12 Tons	2,500
15 Tons	3,000
20 Tons	3,400
25 Tons	3,700
30 Tons	4,600
40 Tons	5,600
3-4 Tons Twin	\$1,200
4-5 Tons Twin	1,300
8 Tons Dairy Feed	2,300
12 Tons Dairy Feed	3,000
15 Tons Dairy Feed	3,500

Tanks are equipped with scissors-type opening chute.

### CONCRETE GRAIN STORAGE SILOS

Reinforced Concrete Floor With Tilt-Up Concrete Exterior Walls	
1,500 square feet	\$8.00 per square foot
2,000 square feet	7.00 per square foot
2,500 square feet	6.50 per square foot
3,000 square feet	6.25 per square foot
3,500 square feet	6.00 per square foot
4,000 square feet	6.00 per square foot
5,000 square feet	5.00 per square foot
6,000 square feet	4.50 per square foot
8,000 square feet	3.60 per square foot

## MISCELLANEOUS COSTS

### ABOVE-GROUND FUEL TANKS & CONTAINMENT SYSTEMS

#### PREFABRICATED CONCRETE FUEL CONTAINMENT TUBS

400 gallon capacity containment	\$700
500 gallon capacity containment	\$900
1,000 gallon capacity containment	\$1,200

#### CONTAINMENT WITH TANK AND ELECTRIC PUMPS

500 gallon – diesel	\$3,500
1,000 gallon – diesel	\$4,600
500 gallon – gasoline	\$4,200
1,000 gallon – gasoline	\$5,400

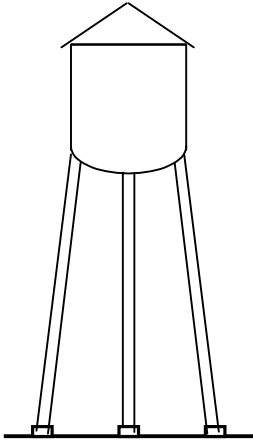
#### ABOVE-GROUND FUEL TANKS (Steel Tanks with Thick Outer Shell of Concrete)

Gallons	Cost
500, with electric pump	\$4,000 - \$4,500
1,000, with electric pump	\$7,000
2,000, with electric pump	\$10,500
Double unit—(1) 1,000 gallon, (1) 500 gallon with 2 electric pumps	\$8,500 - \$8,800

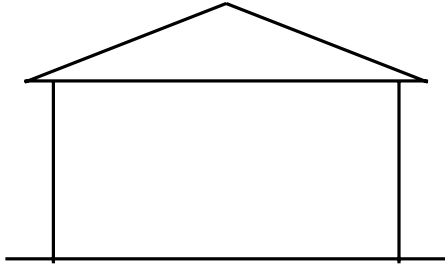


## MISCELLANEOUS COSTS

### ELEVATED STEEL WATER STORAGE TANKS

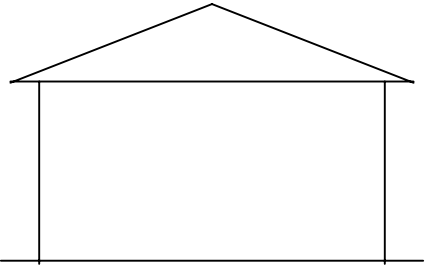
	Gallon Capacity	Total Cost of 75' Tower and Tank	Total Cost of 100' Tower and Tank
	25,000	\$160,000	\$185,000
	30,000	170,000	195,000
	40,000	180,000	200,000
	50,000	185,000	210,000
	60,000	192,000	220,000
	75,000	200,000	230,000
	100,000	230,000	250,000
	150,000	290,000	310,000
	200,000	360,000	380,000
	300,000	450,000	480,000
	500,000	600,000	640,000
	1,000,000	1,000,000	1,100,000

### WELDED STEEL WATER STORAGE TANKS ON GROUND WITH FOUNDATION

	Gallon Capacity	Total Cost of Tank on Ground
	25,000	\$32,000
	30,000	36,000
	40,000	40,000
	50,000	48,000
	60,000	53,000
	75,000	63,000
	100,000	77,000
	150,000	90,000
	200,000	102,000
	300,000	129,000
	500,000	190,000
	1,000,000	280,000

## MISCELLANEOUS COSTS

### GALVANIZED STEEL WATER STORAGE TANKS ON CRUSHED ROCK BASE

	Gallon Capacity	Total Cost of Tank on Ground
	1,000	\$1,050
	1,500	1,260
	2,000	1,300
	2,500	1,470
	3,000	1,575
	4,500	1,950
	5,000	2,210
	6,000	2,420
	7,000	3,000
	8,000	3,310
	9,000	3,670
	10,000	3,990
	12,000	4,310
	14,000	4,930
	17,000	5,570
	20,000	6,520

Price varies due to gauge, height, diameter, and delivery costs.

Price typically includes crushed rock base.

Height varies from 4' to 24'; diameter varies from 7' 0" to 11' 11".

Tanks usually have 12-gauge floor with 12-gauge to 14-gauge walls.

### POLYETHYLENE OR FIBERGLASS TANKS (Used for Ag Chemicals or Water)

Capacity (Gallons)	Cost
1,000	\$ 850
2,000	1,550
3,000	2,400
4,000	3,050
5,000	3,850
6,000	4,450
8,000	5,700
10,000	6,950

Add **\$2.50** per square foot for concrete base

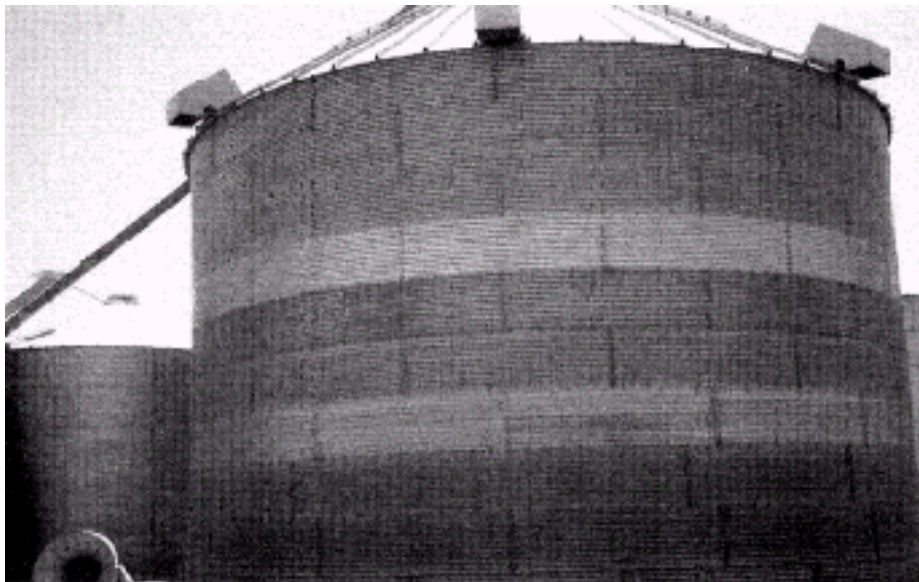


## MISCELLANEOUS COSTS

### STEEL GRAIN BINS

Sacramento and Northern California

Steel grain bins are used for storage and drying of small grains. The typical storage bin has metal walls and roof, a concrete floor and foundation. The drying bin is of similar construction with a dryer floor, unloading auger, and leveler. Dryer fan, heater unit, and motor are also considered part of the drying bin.



## MISCELLANEOUS COSTS

### STEEL GRAIN BINS

Sacramento and Northern California

#### GRAIN DRYING BINS

Diameter	Eave Heights											
	8'	10'	13'	16'	18'	21'	24'	32'	40'	48'	58'	64'
14'	11,120	11,325										
18'	12,550	13,160	13,465	13,770	14,485	14,790	16,320	20,195	22,950	25,195		
21'		14,790	15,300	15,710	16,320	17,035	18,870	23,260	25,910	29,275		
24'		16,935	17,340	17,950	18,615	19,585	21,830	26,775	29,685	33,970	38,045	41,515
27'		20,300	20,810	21,625	22,340	23,870	26,320	32,640	34,680	40,700	43,455	51,000
30'		22,850	23,260	24,075	25,095	26,520	28,970	35,700	39,575	45,085	53,040	58,140
36'			30,800	31,875	33,355	34,885	37,740	45,290	51,410	58,550	68,645	74,970
42'				39,375	39,885	42,025	49,370	57,835	66,200	73,545	86,190	92,415
48'				50,490	53,550	56,715	60,945	69,360	72,420	87,210	100,980	110,160

Includes cost of foundation, perforated floor, unloading auger, aeration unit, fan, dryer, and stirring devices.

#### GRAIN STORAGE BINS

Diameter	Eave Heights											
	8'	10'	13'	16'	18'	21'	24'	32'	40'	48'	58'	64'
14'	5,660	5,915										
18'	6,425	7,090	7,500	7,805	7,910	8,775	10,405	13,570	16,065	18,565		
21'		8,060	8,570	8,875	9,180	10,100	12,140	15,810	18,360	21,625		
24'		9,385	9,895	10,200	11,220	11,730	14,385	18,055	21,420	24,990	29,835	33,150
27'		11,220	11,730	12,240	13,260	14,895	17,595	22,950	25,500	30,910	37,230	41,055
30'		12,750	13,260	13,770	14,790	16,935	19,075	24,890	28,560	33,915	42,435	47,735
36'			17,340	18,465	19,485	21,625	24,790	31,620	36,925	44,370	54,875	61,200
42'				23,155	23,770	25,195	33,150	39,885	48,350	56,715	68,340	75,685
48'				32,030	34,680	37,740	42,840	49,470	56,610	66,300	80,580	89,250

Includes cost of bin foundation, door, ladder, and unloading auger.

**ADD FOR:** Roof Augers **\$650 - \$1,000** (depends on length—13' to 24')  
 Fan **\$1,700** (5 H.P.) to **\$3,100** (25 H.P.)

#### PERFORATED FLOORS

14'	18'	21'	24'	27'	30'	36'	42'	48'
\$1,150	\$1,700	\$2,100	\$2,700	\$3,300	\$4,100	\$5,700	\$7,400	\$9,000

## MISCELLANEOUS COSTS

### 2-INCH REDWOOD WATER STORAGE TANKS

Gallons	Diameter	Height	Cost
500	5'	4'	\$2,120
1,000	6'	6'	2,495
1,500	7'	6'	3,120
2,000	8'	6'	3,745
3,000	10'	6'	4,990
4,000	10'	8'	5,990
5,000	11'	8'	6,865
6,000	12'	8'	7,860
7,000	11'	10'	8,235
8,000	12'	10'	8,735
9,000	13'	10'	9,610
10,000	14'	10'	10,730
12,000	15'	10'	11,730
15,000	14'	14'	13,480

Above costs include chime joists, covers, foundation, and all labor, set up,  
and transportation charges.

**ADD FOR:**    Ladders                      **\$15** per lineal foot  
                     Water level registers    **\$10** per lineal foot of tank height  
                     Cone covers                    **\$225 - \$450** per tank

## MISCELLANEOUS COSTS

### 3-INCH REDWOOD WATER STORAGE TANKS

Gallons	Diameter	Height	Cost
10,000	14'	10'	\$15,900
12,000	14'	12'	18,900
15,000	16'	12'	20,280
20,000	18'	12'	26,160
25,000	17'	16'	28,560
30,000	20'	14'	33,180
40,000	23'	14'	40,620
50,000	24'	16'	46,500
60,000	26'	16'	52,200
70,000	28'	16'	55,635
75,000	29'	16'	63,000
80,000	30'	16'	68,040
90,000	30'	18'	71,400
100,000	32'	18'	78,720
150,000	37'	20'	108,360
200,000	43'	20'	130,800

Above costs include typical foundation, chime joists, tank cover, and all labor, set up, and transportation charges.

### CYLINDRICAL 3-INCH REDWOOD WINE TANKS

Gallons Capacity	Base Price
1,000	\$3,960
1,500	5,280
2,000	6,060
2,500	7,320
3,000	8,520
4,000	9,120
5,000	11,280
7,500	13,920
10,000	15,360
15,000	21,240
20,000	25,980
25,000	28,560
30,000	32,210

Base price includes 4" x 6" chime joists, 1/2' galvanized hoops, recessed head cover, side door with galvanized T-bolt.

## MISCELLANEOUS COSTS

### STAINLESS STEEL WINE TANKS

Gallons Capacity	Cost
1,000	\$5,000
2,000	7,000
3,000	8,000
4,000	9,000
5,000	10,000
10,000	12,000
20,000	19,500
50,000	35,000
100,000	60,000
200,000	108,000

Cost includes all valves, temperature controls, vents, and cooling jackets for tanks with a capacity of 20,000 gallons or less. The cost on tanks of 50,000 gallons or more excludes cooling jackets.

### CYLINDRICAL 2 INCH OAK TANKS

Gallons Capacity	Base Price
500	\$1,875
750	2,700
1,000	3,500
1,250	4,300
1,500	5,000
2,000	7,000
2,500	8,100
3,000	9,300
4,000	12,500
5,000	15,000
6,000	18,000

Base price includes 4" x 6" chime joists, galvanized hoops, head supports with stainless steel head bolts, side door with stainless T-bolt, installation in Sonoma County. Foundations not included.

## MISCELLANEOUS COSTS

### PREFABRICATED METAL SHADES

#### SPECIFICATIONS

Foundation	Metal base plate with tie downs
Floor	Dirt
Wall/Roof Frame	2 3/8" galvanized structural tubing (4' on center) 7' to 9' eaves
Roofing	29-gauge steel with baked on enamel (extends 6" to 12" below eaves)
Exterior Wall Covering	None

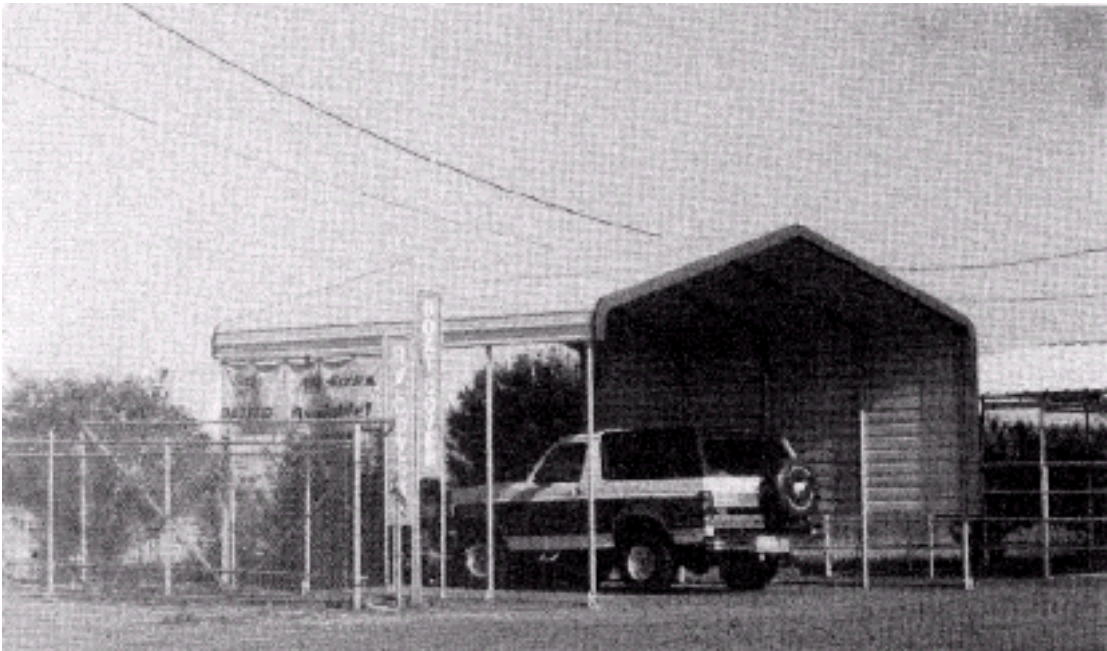
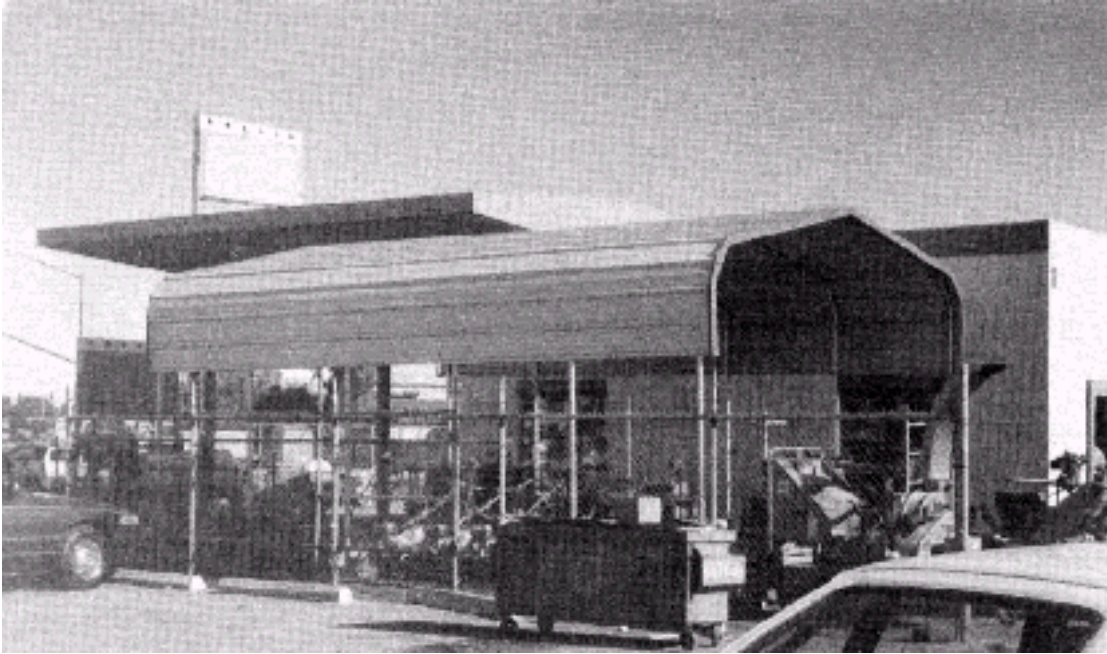
#### COMMON SIZES

12' x 21'	\$980	20' x 21'	\$1,700
12' x 26'	1,190	20' x 26'	2,080
12' x 31'	1,560	20' x 31'	2,540
12' x 36'	1,820	20' x 36'	2,960
12' x 41'	2,080	20' x 41'	3,360

#### ADDITIVES

- Add 6 percent to above prices for 26-gauge steel roofing
- 29-gauge metal wall covering—**\$1.00** per square foot of wall (standard roofing extends 6" to 12" below eaves)
- Back enclosure kit:
  - 12-foot wide—**\$300**
  - 20-foot wide—**\$335**
- Front enclosure kit with opening for roll-up door:
  - 12-foot wide—**\$300**
  - 20-foot wide—**\$350**
- Roll-up door—**\$600-\$800**
- Walk-thru door—**\$300**
- Add 3 percent for each additional foot of wall height above 9 feet
- Concrete floor—**\$2.75 to \$3.00** per square foot

**MISCELLANEOUS COSTS**  
**PREFABRICATED METAL SHADES**



## AH 534.80: WIND MACHINES

New machines will average a physical life of 30 years. Typical usage will average 100 - 150 hours per year. Each wind machine will service approximately 10 acres.

### WIND MACHINES

Model	Cost
G.P. 359 Cummins Diesel	\$19,500
G.P. 460 Ford, Gas or L.P.G.	16,900
G.P. 454 Chev., Gas or L.P.G.	16,500
G.P. 300 Ford Gas or L.P.G.	15,600
100 H.P. Electric	14,000
50 H.P. Electric	12,500

Tower height for above machines is 35 feet.

### OPTIONS

Item	Cost
Contour head	\$1,250
40' Tower	550

Above prices include foundation and installation.

### RECONDITIONED WIND MACHINES

Electric: 100 HP	\$10,000
Gas: V-8, 86 HP	\$ 7,800
Various used types	\$ 7,000 to \$11,000



## WIND MACHINES

### USED ELECTRIC MACHINES

H-P	Model	Cost
12 1/2*	Frostmaster	\$2,700
12 1/2*	Tropic Breeze	2,700
25*	Frostmaster (Wood Fan)	3,500
25*	Frostmaster (Metal Fan)	4,100
25*	Tropic Breeze	4,100
35*	Frostmaster	4,400
40*	Tropic Breeze 900 RPM	4,500
40*	Tropic Breeze Teeter Hub Fan	4,800
50*	Tropic Breeze Teeter Hub Fan	5,200
50*	Tropic Breeze 900 RPM	4,800
60*	Tropic Breeze 900 RPM	5,500
60*	Tropic Breeze Teeter Hub Fan	5,700
75	Tropic Breeze 900 RPM	6,800
75	Tropic Breeze Teeter Hub Fan	7,100
100	Tropic Breeze 900 RPM	7,500
100	Tropic Breeze Teeter Hub Fan	8,000
125	Tropic Breeze 900 RPM	8,200
125	Tropic Breeze Teeter Hub Fan	8,700

Electrical machines being installed for PG&E service will be billed an additional **\$500** for conduit, wire, labor, etc.

### USED GAS & \*PROPANE MACHINES

H-P	Model	Cost
223-6	Gasoline 68 H-P	\$ 5,000
240-6	Gasoline 68 H-P	5,000
292-V-8	Gasoline 86 H-P	6,200
332-V-8	Gasoline 86 H-P	6,200
300-6	Gasoline 92 H-P	6,500
391-V-8	Gasoline 100 H-P	8,000
391-V-8	Gasoline 125 H-P	8,500
460-V-8	Gasoline 125 H-P	10,000

All the above machines can be converted to propane if desired. Cost will be **\$600** additional for each motor.

### DIESEL MACHINES (REBUILT ENGINES)

330 Ford *	6 Cylinder	Diesel - 81 H-P	\$ 9,000
363 Ford *	6 Cylinder	Diesel - 100 H-P	10,000
378 Cummins *	V-6	Diesel - 125 H-P	12,000

The above prices include a 550 gallon above-ground fuel tank. Larger tanks are available on request at additional cost.

\* Denotes: No longer made

## WIND MACHINES

The cost of used wind machines can vary widely depending upon the age and condition of the equipment.

### USED TROPIC BREEZE SINGLE EOT MACHINES

Model		Cost
23 6 Cyl.	Black Fan 68 H-P	\$5,500
223 6 Cyl.	Teeter Hub Fan 68 H-P	5,500
292 V-8	Teeter Hub Fan 86 H-P	6,200
332 V-8	Black Fan 86 H-P	6,500
332 V-8	Teeter Hub Fan 86 H-P	6,200
300 6 Cyl.	Teeter Hub Fan 92 H-P	7,700
391 V-8	Teeter Hub Fan 100 H-P	9,000
391 V-8	Teeter Hub Fan 125 H-P	9,200
460 V-8	Teeter Hub Fan 100 H-P	10,500

The above machines can be converted to propane if desired. Cost will be **\$800** additional for each motor.

### USED TROPIC BREEZE SINGLE EOT MACHINES

Model		Cost
* 261 6 Cyl.	Chev. Gasoline 70 H-P (Wood Fan)	\$6,100
* 261 6 Cyl.	Chev. Gasoline 70 H-P (Fiber Glass Fan)	6,750
* 264 6 Cyl.	IHC Gasoline 70 H-P (Fiber Glass Fan)	6,750
* 264 6 Cyl.	IHC Gasoline 80 H-P (Teeter Hub Fan)	7,000
* 345 V-8.	IHC Gasoline 110 H-P (Teeter Hub Fan)	8,000
* 292 6 Cyl.	Chev. Yuma EOT	6,200

\* Denotes: No longer made

The above machines can be converted to propane at a cost of **\$600** per motor.

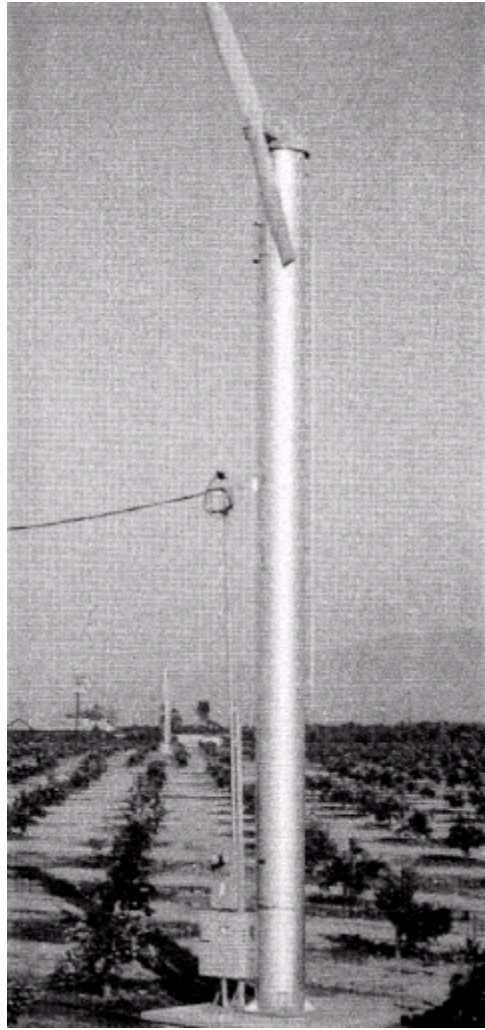
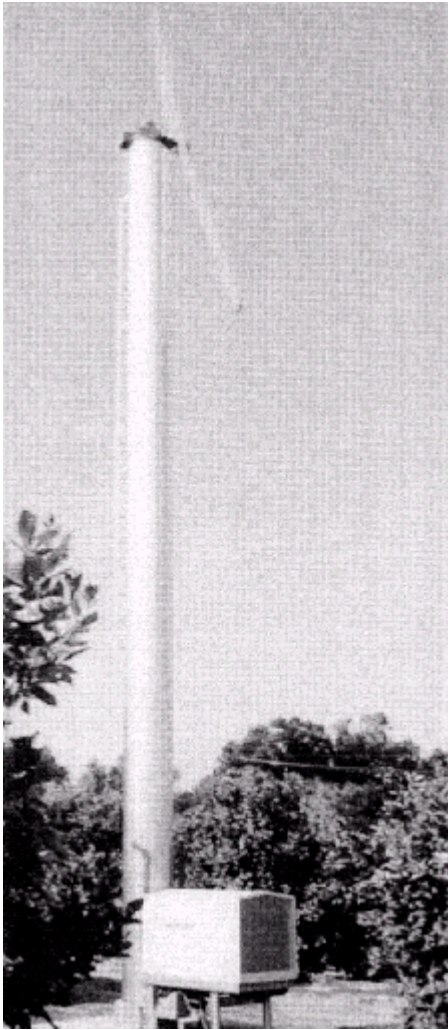
NOTE: All used costs listed above include foundation and installation.

# WIND MACHINES

## ABBREVIATIONS

GP	Ground Power
RT	Rotating Tower
TT	Tall Tower
ST-ROT	Standard Rotation
SP-ROT	Special Rotation
LC	Low Crop
S	Single
D	Dual
EOT	Engine on Tower
SC	Special Contour

## WIND MACHINES



# AH 534.90: DEPRECIATION

## AVERAGE LIFE TABLES

### MISCELLANEOUS IMPROVEMENTS

<u>Use Type of Improvement</u>	<u>Quality/Type</u>	<u>Type of Schedule</u>	<u>Average Life</u>
Barns (General Farm)	Poor	R.	20
Barns (General Farm)	Fair	R.	30
Barns (General Farm)	Good	R.	40
Barns (General Farm)	Excellent	R.	60
Barns, Dairy	Poor	R.	20
Barns, Dairy	Average	R.	20
Barns, Dairy	Good	R.	25
Cold Storage Food Lockers	Poor	O.R.	30
Cold Storage Food Lockers	Average	O.R.	40
Cold Storage Food Lockers	Good	O.R.	50
Cold Storage Warehouses	Poor	O.R.	40
Cold Storage Warehouses	Average	O.R.	50
Cold Storage Warehouses	Good	O.R.	60
Cotton Gins		O.R.	30
Drive-In Theaters	Poor	O.R.	20
Drive-In Theaters	Good	O.R.	30
Drying Sheds (Fruits & Nuts) (Wood Frame)	Poor	R.	10
Drying Sheds (Fruits & Nuts) (Wood Frame)	Fair	R.	20
Drying Sheds (Fruits & Nuts) (Wood Frame)	Good	R.	30
Fences, Wood or Wire	Poor	R.	10
Fences, Wood or Wire	Average	R.	20
Fences, Wood or Wire	Good	R.	30
Fences, Chain Link, Residence-Farm	Light	R.	20
Fences, Chain Link, Industrial-Commercial	Good	R.	30

# DEPRECIATION

## AVERAGE LIFE TABLES

### MISCELLANEOUS IMPROVEMENTS

<u>Use Type of Improvement</u>	<u>Quality/Type</u>	<u>Type of Schedule</u>	<u>Average Life</u>
Frost Protection Wind Machines		R.	30
Grain Elevators	Concrete and Metal	O.R.	50
Grain Storage Bins	Metal	O.R.	40
Grain Storage Bins	Concrete	O.R.	60
Greenhouses, Commercial	Poor Wood Frame	O.R.	20
Greenhouses, Commercial	Average	O.R.	30
Greenhouses, Commercial	Good	O.R.	40
Greenhouses, Conservatory (Back Yard)	Poor	R.	10
Greenhouses, Conservatory (Back Yard)	Good	R.	20
Hog and Sheep Sheds and Corrals	Poor	R.	10
Hog and Sheep Sheds and Corrals	Fair	R.	20
Hog and Sheep Sheds and Corrals	Good	R.	30
Lath Houses	Poor	R.	10
Lath Houses	Fair	R.	20
Lath Houses	Good	R.	30
Motor Truck Scales	Wood Under-structure	O.R.	30
Motor Truck Scales	Wood Under-structure	O.R.	40
Poultry Houses	Poor	R.	10
Poultry Houses	Medium	R.	20
Poultry Houses	Good	R.	30
Rice Drying and Storage Plants	Concrete and Metal	O.R.	50

# DEPRECIATION

## AVERAGE LIFE TABLES

### MISCELLANEOUS IMPROVEMENTS

<u>Use</u> <u>Type of Improvement</u>	<u>Quality/Type</u>	<u>Type of Schedule</u>	<u>Average Life</u>
Service Stations	Poor Wood Frame	O.R.	20
Service Stations	Good Wood Frame, or Light Steel, or Masonry	O.R.	25
Service Stations	Good Wood Frame, or Light Steel, or Masonry	O.R.	30
Silos, Wood	Poor	R.	20
Silos, Wood	Good	R.	30
Silos, Masonry - Tile and Basalite		R.	40
Silos, Masonry - Concrete		R.	50
Steel Building, Quonset or Straight Wall Type (Steel Frame)	Light	O.R.	40
Steel Building, Quonset or Straight Wall Type (Steel Frame)	Medium	O.R.	50
Steel Building, Quonset or Straight Wall Type (Steel Frame)	Heavy	O.R.	60
Storage Sheds (Frame)	Poor	R.	20
Storage Sheds (Frame)	Fair	R.	30
Storage Sheds (Frame)	Good	R.	40
Swimming Pools	Poor	R.	10
Swimming Pools	Fair	R.	20
Swimming Pools	Good	R.	30
Water Tanks, Elevated	Wood Frame and Tank	O.R.	30
Water Tanks, Elevated	Wood Frame and Tank	O.R.	60

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Poor = Poorest grade of materials; not contractor erected.

Fair = Average materials; builder erected.

Good = Good materials; good design; erected by competent builder.

# DEPRECIATION

## NORMAL PERCENT GOOD TABLES - RESIDENTIAL BUILDINGS

Age Years	20 Years Avg Life		25 Years Avg Life		30 Years Avg Life		40 Years Avg Life	
	Rem Life Years	Percent Good	Rem Life Years	Percent Good	Rem Life Years	Percent Good	Rem Life Years	Percent Good
0	20	100	25	100	30	100	40	100
1	19	94	24	95	29	96	39	98
2	18	88	23	90	28	93	38	96
3	17	81	22	86	27	89	37	94
4	16	75	21	81	26	86	36	92
5	15	69	20	77	25	82	35	90
6	14	63	19	72	24	79	34	87
7	13	59	18	68	23	75	33	84
8	12	57	17	63	22	71	32	82
9	11	55	16	60	21	67	31	80
10	11	53	16	58	20	64	30	77
11	10	50	15	56	19	60	29	74
12	9	48	14	54	19	59	28	72
13	8	46	13	53	18	57	27	70
14	7	44	12	51	17	56	27	67
15	7	42	11	49	16	54	26	65
16	6	40	11	48	15	53	25	62
17	5	38	10	46	14	52	24	60
18	5	36	9	44	13	50	23	59
19	4	33	8	43	13	49	22	58
20	4	31	7	41	12	47	21	56
21	3	29	7	39	11	46	21	55
22	3	27	6	37	11	44	20	54
23	3	25	6	35	10	43	19	53
24	3	23	5	34	9	42	18	52
25	2	21	5	32	9	40	17	51
26	2	19	4	30	8	39	17	50
27	2	16	4	29	7	37	16	49
28	2	14	4	27	7	36	15	48
29	2	12	3	25	6	34	14	47
30	1	10	3	24	6	33	14	46
31			3	22	5	31	13	45
32			3	20	5	30	12	44
33			2	18	5	29	12	43
34			2	17	4	17	11	42
35			2	15	4	26	11	41
36			2	13	4	24	10	40
38			1	10	3	21	9	38
40					2	19	7	35
42					2	16	6	33
46					1	10	5	29
50							4	25
55							3	20
60							2	14
64							1	10



# DEPRECIATION

## NORMAL PERCENT GOOD TABLES - RESIDENTIAL BUILDINGS

Age Years	45 Years Avg Life		50 Years Avg Life		55 Years Avg Life		60 Years Avg Life	
	Rem Life Years	Percent Good	Rem Life Years	Percent Good	Rem Life Years	Percent Good	Rem Life Years	Percent Good
0	45	100	50	100	55	100	60	100
2	43	97	48	97	53	98	58	98
4	41	93	46	94	51	96	56	96
6	39	89	44	91	49	94	54	94
8	37	85	42	88	47	91	52	92
10	35	81	40	85	45	88	50	90
12	33	77	38	82	43	85	48	88
14	32	73	36	78	41	82	46	86
16	30	69	35	74	40	79	45	83
18	28	65	33	70	38	76	43	80
20	26	60	31	67	36	73	41	77
22	24	58	29	63	34	69	39	74
24	23	56	28	60	32	65	37	71
26	22	54	26	58	31	62	35	68
28	20	52	24	56	29	60	34	65
30	18	50	23	54	27	58	32	63
32	17	48	21	53	26	56	30	60
34	15	47	20	51	24	55	29	58
36	14	45	18	49	23	53	27	57
38	12	43	17	47	21	51	26	55
40	11	41	16	45	20	50	24	54
42	10	39	14	44	19	48	23	52
44	9	37	13	42	17	46	21	51
46	8	35	12	40	16	45	20	49
48	7	33	11	38	15	43	19	47
50	6	31	10	37	14	41	18	46
52	5	29	9	35	12	40	16	44
54	5	28	8	33	11	38	15	43
56	4	26	7	31	10	36	14	41
58	4	24	6	30	9	35	13	40
60	3	22	5	28	8	33	12	38
62	3	20	4	26	7	31	11	37
64	3	18	4	24	6	30	10	35
66	2	16	3	22	5	28	9	33
68	2	14	3	21	5	27	8	32
70	2	12	3	19	4	25	7	30
72	1	10	2	17	4	23	6	29
76			2	14	3	20	5	26
80			1	10	2	17	4	23
84					1	10	2	16
96							1	10

# DEPRECIATION

## NORMAL PERCENT GOOD TABLES - OTHER THAN RESIDENTIAL BUILDINGS

Age Years	20 Years Avg Life		25 Years Avg Life		30 Years Avg Life		35 Years Avg Life	
	Rem Life Years	Percent Good	Rem Life Years	Percent Good	Rem Life Years	Percent Good	Rem Life Years	Percent Good
0	20	100	25	100	30	100	40	100
1	19	95	24	97	29	98	34	99
2	18	90	23	93	28	96	33	97
3	17	85	22	90	27	93	32	95
4	16	79	21	86	26	90	31	93
5	15	73	20	82	25	88	30	91
6	14	67	19	78	24	85	29	89
7	13	61	18	74	23	82	28	87
8	12	56	17	70	22	79	27	85
9	11	51	16	65	21	75	26	83
10	10	49	15	60	20	72	25	80
11	9	48	14	56	19	68	24	78
12	9	46	13	52	18	65	23	75
13	8	44	12	50	17	61	22	72
14	7	43	11	48	16	58	21	69
15	6	43	10	47	15	54	20	66
16	6	41	9	46	14	50	19	63
17	5	39	8	45	13	49	18	60
18	5	38	8	44	12	48	17	57
19	5	37	7	43	12	47	16	54
20	4	35	7	42	11	47	15	51
21	4	34	6	41	11	46	14	50
22	4	33	6	40	10	45	13	49
23	3	32	5	39	10	44	13	48
24	3	30	5	38	9	43	12	47
25	3	29	5	37	9	43	12	47
26	3	28	4	36	8	42	11	46
27	2	27	4	35	8	41	11	45
28	2	25	4	34	7	40	10	44
29	2	24	4	33	7	39	10	43
30	2	22	3	32	6	38	9	43
31	2	21	3	31	6	37	9	42
32	1	20	3	30	5	36	8	42
33			3	29	5	35	8	41
34			3	28	5	35	7	40
35			2	27	5	34	7	39
36			2	26	4	33	6	38
38			2	24	4	32	6	37
40			2	22	3	30	5	36
42			1	20	3	28	5	34
45					2	26	4	32
48					2	23	3	30
52					1	20	3	27
56							2	24
62							1	20

# DEPRECIATION

## NORMAL PERCENT GOOD TABLES - OTHER THAN RESIDENTIAL BUILDINGS

Age Years	40 Years Avg Life		45 Years Avg Life		50 Years Avg Life		55 Years Avg Life	
	Rem Life Years	Percent Good	Rem Life Years	Percent Good	Rem Life Years	Percent Good	Rem Life Years	Percent Good
0	40	100	45	100	50	100	55	100
2	38	98	43	99	48	99	53	99
4	36	96	41	97	46	98	51	98
6	34	93	39	95	44	97	49	97
8	32	90	37	93	42	95	47	96
10	30	86	35	90	40	93	45	95
12	28	82	33	87	38	91	43	94
14	26	78	31	84	36	88	41	92
16	24	73	29	81	34	85	39	90
18	22	68	27	77	32	82	37	88
20	20	63	25	73	30	80	35	86
22	18	58	23	69	28	77	33	83
24	17	53	21	65	26	73	31	80
26	15	50	20	60	24	69	29	77
28	14	48	18	55	23	65	27	74
30	13	47	17	50	21	61	26	71
32	11	45	15	49	20	57	24	67
34	10	44	14	48	18	53	22	63
36	9	43	13	47	17	50	21	59
38	8	42	12	46	16	48	19	55
40	8	40	11	44	14	47	18	52
42	7	39	10	43	13	46	17	50
44	6	38	9	42	12	45	16	49
46	6	36	8	41	11	44	15	48
48	5	35	7	40	10	43	14	47
50	5	34	7	38	10	42	13	45
52	4	32	6	37	9	41	12	44
54	4	31	6	36	8	40	11	43
56	3	30	5	35	8	39	10	42
58	3	29	5	34	7	38	9	41
60	3	27	4	32	7	37	9	40
62	2	26	4	31	6	36	8	39
64	2	25	4	30	6	35	8	38
66	2	24	3	29	5	34	7	37
68	2	22	3	28	5	33	7	36
70	2	21	3	27	4	32	6	36
72	1	20	3	25	4	31	6	35
74			2	24	5	30	5	34
76			2	23	3	28	5	32
82			1	20	3	26	4	30
84					2	24	4	29
88					2	22	3	27
92					1	20	2	25
96							2	23
102							1	20

# DEPRECIATION

## NORMAL PERCENT GOOD TABLES - OTHER THAN RESIDENTIAL BUILDINGS

Age Years	60 Years Average Life		70 Years Average Life	
	Remaining Life Years	Percent Good	Remaining Life Years	Percent Good
0	60	100	70	100
2	58	99	68	99
4	56	99	66	99
6	54	98	64	99
8	52	97	62	98
10	50	96	60	98
12	48	95	58	97
14	46	94	56	96
16	44	93	54	96
18	42	92	52	95
20	40	89	50	94
22	38	87	48	93
24	36	85	46	92
26	34	83	45	91
28	32	81	42	89
30	30	78	40	87
32	29	75	39	85
34	27	72	37	83
36	25	69	35	81
38	24	66	33	79
40	22	63	31	76
42	21	60	30	73
44	20	56	29	70
46	18	52	27	67
48	17	49	26	64
50	16	48	25	61
52	15	47	23	58
54	14	46	22	56
56	13	46	21	54
58	12	45	20	52
60	11	44	19	50
64	10	42	17	48
68	9	40	15	46
72	8	38	13	44
76	7	36	12	43
80	6	35	11	41
86	5	32	9	39
92	4	29	8	36
100	3	25	6	33
108	2	22	4	29
112	1	20	3	27
122			2	24
130			1	20